

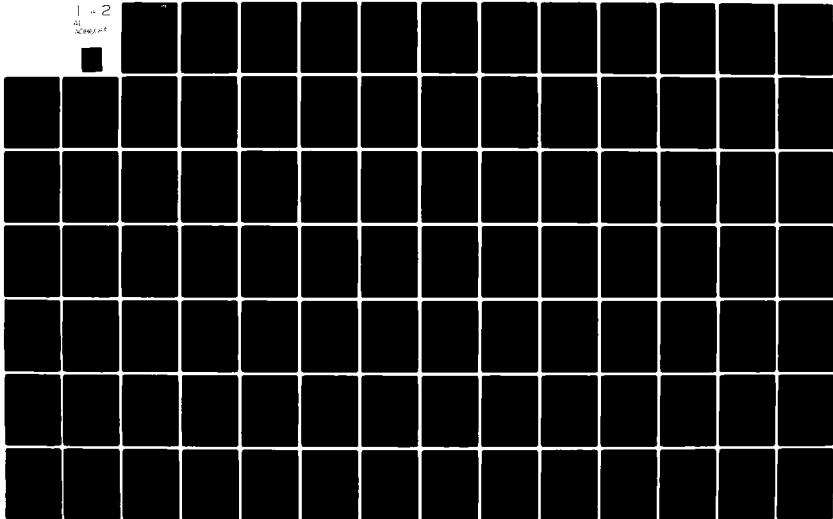
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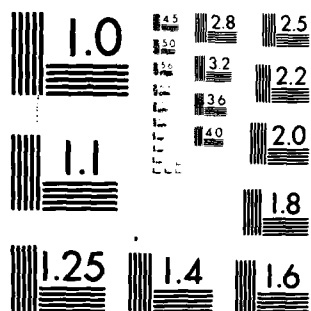
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BASELINE DESCRIPTION AND ANALYSIS OF THE OPERATIONS RELATED TO
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BASELINE DESCRIPTION AND ANALYSIS

OF THE

OPERATIONS RELATED TO WAREHOUSE CONTROLLED DOCUMENTS

AT THE

NAVY PUBLICATIONS AND FORMS CENTER, PHILADELPHIA, PA.

VOLUME I

PHASE I FINAL REPORT

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STERLING SYSTEMS, INCORPORATED

1749 OLD MEADOW ROAD

MCLEAN, VIRGINIA 22102

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Baseline Description and Analysis

of the

Operations Related to Warehouse Controlled Documents

at the

Navy Publications and Forms Center, Philadelphia, Pa.

Pennsylvania

Volume I, Phase I.

⑨ Final Rept. Oct 78-Mar 80, ***

Phase I Final Report

⑫ 137 /

⑩ Dev R./Chudhary Arthur H./Edford

Prepared for:

Computer Science and Information Systems Division

David W. Taylor Naval Ship Research and Development Center

Bethesda, Maryland

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Sterling Systems, Incorporated

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This study documents a baseline description and analysis of operations at the Navy Publications and Forms Center (NPFC) associated with the management of warehouse controlled documents. The study was conducted in two phases. Phase I (documented in Volume I) focused on: functional description of NPFC operations, estimation of demand for NPFC services by document and customer		

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categories, analysis of procurement activities, and description of the physical characteristics of the stocked documents.

Phase II (documented in Volume II) focused on: development of the cost and volume estimates for NPFC and printing support operations, estimation of the number of line items stocked by NPFC by document category, geographic distribution of document demand, document cancellations and disposal activities, and NPFC interface with Document Preparing Activities.

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1.0 INTRODUCTION/BACKGROUND

The Naval Publications and Forms Center (NPFC), Philadelphia, Pa. is an active operating field activity under the auspices of the Commander, Naval Supply Systems Command. It is a tenant activity located on the Aviation Supply Office (ASO) Compound and is one of eight Department of Defense activities. NPFC occupies approximately 46,000 square feet of administrative space (Building 26) and 760,000 square feet of warehouse space in five buildings (Buildings 5,6,7,8 and 26), one of which is the largest single depository for classified material in the Navy.

NPFC's basic mission is to perform inventory management functions for Navy publications and forms; stock, issue and initially distribute Navy and Department of Defense printed matter, and perform other functions as may be assigned by the Commander, Naval Supply Systems Command. The following categories of documents are stocked by NPFC:

- COG OI Publications
- COG II Forms
- Navy and Marine Corps Recruiting Aids
- Military Specifications*
- Military Standards*
- Navy Instructions and DOD Directives*
- Data Item Descriptions (DIDs)*
- Qualified Products Lists (QPLs)*
- Federal Specifications*
- Federal Standards*
- Industry Standardization Documents*
- International Standardization Documents*
- Military Handbooks*
- NAVAIR Technical Directives*

*Warehouse Controlled Items

As part of its overall mission, NPFC is responsible for performing the following functions:

- a. Serving as the Inventory Control Point (ICP) for publications and forms, determining publications and forms systems material stockage and funding requirements and providing budget justifications as necessary.
- b. Processing customer request for documents.
- c. Recommending levels of supply and initiating procurement actions as required.
- d. Preparing, distributing, and maintaining shipboard load and allowance lists as directed.
- e. Serving as project manager in the administration of Navy Stock Fund allocations received for financing the procurement of Navy Stock Account material
- f. Compiling necessary data and submitting required financial and statistical reports, including NSA stores returns summarizing certain transactions on a system-wide basis.
- g. Reviewing reports from consumer activities regarding the physical characteristics of NPFC controlled material and recommending to sponsoring commands and offices the changing of specifications to improve the quality of this material.
- h. Establishing standards, when required, for the preservation, packing, packaging, marking and storage of assigned material.
- i. Recommending appropriate printed matter for addition to, or deletion from, the Naval Publications and Forms Center controlled segment of the Navy Supply System.

- j. Preparing continuity of operations and mobilization plans for the segment of the Navy Supply System over which cognizance is exercised; also determining mobilization requirements in coordination with appropriate commands and offices.
- k. Maintaining continuing liaison, including field service visits with user activities, stocking activities, commands, bureaus and offices of Department of Navy, Department of Defense, and other Federal Agencies to promote the support effectiveness of the Naval Publications and Forms Center controlled material.
- l. Performing all cataloging functions for indices related to materials managed.
- m. Distributing Department of Defense printed matter as assigned.
- n. Serving as carrying point for COG "II" forms and as Single Stock Point for Cognizance OI Publications, DOD Standardization Documents, (Navy) Departmental Directives and NAVAIR Technical Directives for issue to Navy, Department of Defense, Other U.S. Government Agencies and other approved users.
- o. Serving as carrying point of local forms for First, Third, and Fourth Naval Districts.
- p. Serving as an outfitting assembly point, as assigned, for publications required for commissioning or reactivation of vessels, squadrons, groups, and wings.
- q. Receiving and processing requisitions for support of authorized Military Assistance Program and other foreign government requirements for assigned printed matter.
- r. Processing Freedom of Information and Cash Sales requests channeled through commands, bureaus, and offices of the Department of the Navy and those received directly from the general public.

- s. Arranging for contiguous activities for material movement via all modes of transportation to world-wide destinations, including all DOD activities and commercial users in accordance with DOD traffic management directives and commercial requirements together with all document preparation for both DOD and commercial movements.
- t. Providing accounting support (stores, plant property, cost and appropriation) and civilian payroll services (preparation) for activities designated by the Commander, Naval Supply Systems Command with the concurrence of the Comptroller of the Navy.
- u. Serving as an Authorization Accounting Activity (AAA) for 28 naval activities, and designated a Financial Information Processing Center (FIPC) within the Integrated Disbursing and Accounting (IDA) system.

Table 1-1 provides an overview of the number of line items carried per year, for the 1970-1978 period, by NPFC. It provides an indication of the overall size and complexity of the operation. An equally complex and sizable organization is required to manage such an operation and perform the wide range of the functions listed above. Figure 1-1 presents the current organizational structure at the overall Command and individual Department levels. Table 1-1a provides an estimate of the NPFC staff resources allocated to the Warehouse Controlled items.

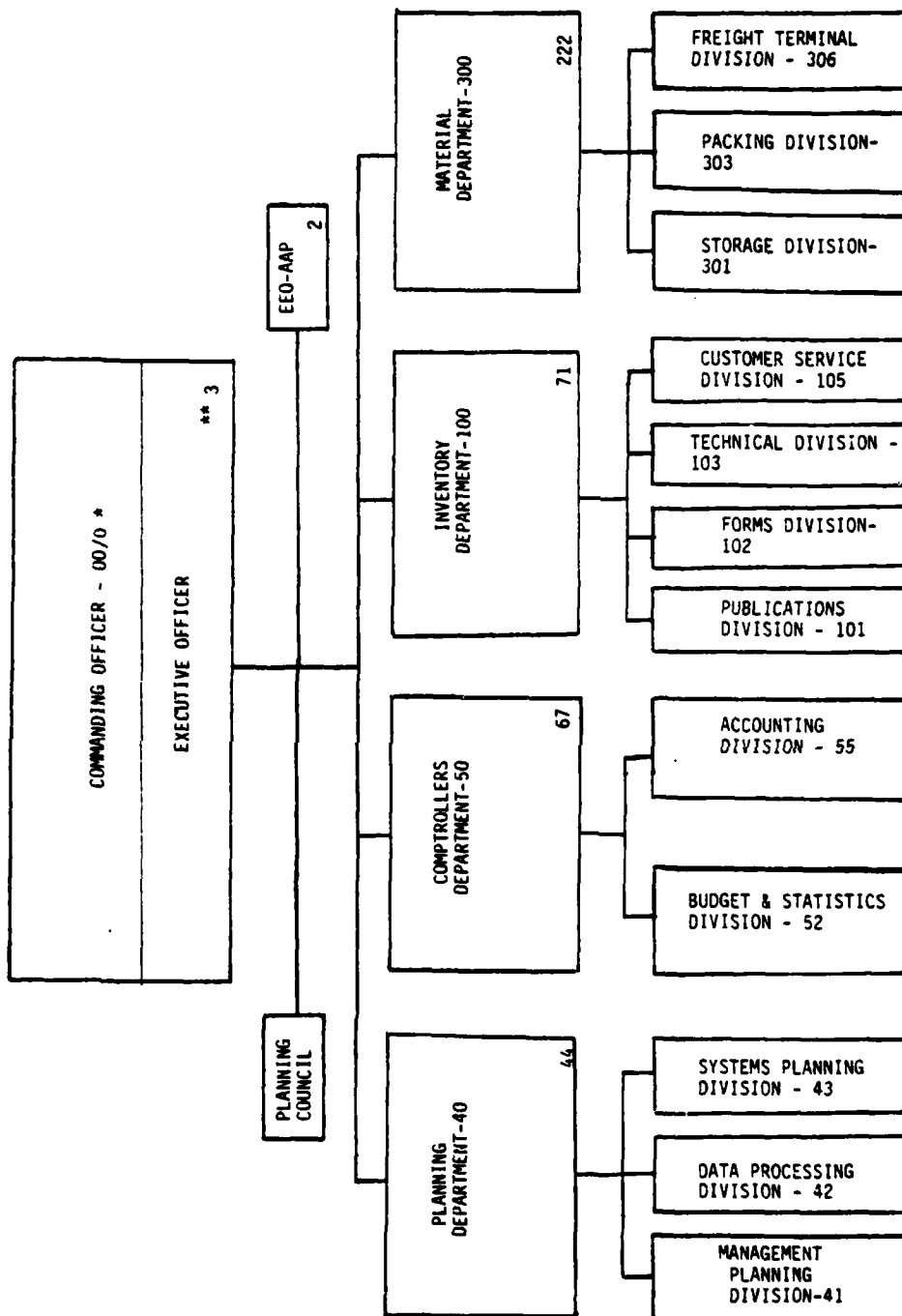
Another indication of the overall size and complexity of operation is provided by some of the operational highlights listed in Table 1-2. As can be seen from the organizational and operations background information provided above, NPFC serves a necessary and important function within the Department of Defense (DOD). By providing requested documents to customers, NPFC supports activities of many DOD and non-DOD organizations. For example, DOD procurement activity is directly supported by NPFC since it provides documents necessary for bid preparations and performing contract work in many areas. Quite often, development of responsive and accurate technical and cost proposals is dependent on the availability of required documents in a timely manner. This objective can only be

TABLE 1-1 SUMMARY OF THE NUMBER OF LINE ITEMS MANAGED BY NPIC*												
DOCUMENT CATEGORY	NUMBER OF LINE ITEMS MANAGED BY YEAR									1970-78 SUMMARY		
	1970	1971	1972	1973	1974	1975	1976	1977	1978	PERCENT CHANGE: 1970 TO 1978	AVERAGE NO. OF LINE ITEMS STOCKED	PERCENT OF ALL LINE ITEMS STOCKED
PUBLICATIONS AND FORMS	142,400	144,600	149,800	146,700	152,000	156,200	159,300	155,800	156,700	+9.2	151,500	57.9
SPECIFICATIONS AND STANDARDS	70,000	70,000	74,400	70,000	71,000	74,400	71,000	71,000	71,000	+1.4	71,088	27.1
NAVAL INSTRUCTIONS	15,500	15,400	15,700	10,200	9,400	8,300	9,400	8,300	8,700	-43.8	11,211	4.3
DOD DIRECTIVES	1,600	1,600	1,600	1,600	1,600	1,500	1,600	1,500	1,100	-31.2	1,522	.6
DATA ITEM DESCRIPTIONS	1,000	1,000	1,000	1,000	1,200	1,100	2,400	2,300	2,400	+71.4	1,488	.5
NAVAIR TECHNICAL DIRECTIVES	30,000	30,000	30,000	30,000	20,000	20,200	20,000	11,800	9,400	-68.6	22,337	8.7
INDUSTRY STANDARDIZATION DOCUMENTS	-	710	1,440	-	-	-	4,000	4,000	-	NA	2,537	.9
TOTALS	260,500	263,310	270,940	259,500	255,200	261,700	267,700	254,700	249,300	- 4.3	261,683	

*Source: NPIC Command History

(As of January, 1979)

NAVAL PUBLICATIONS AND FORMS CENTER
FIGURE 1-1 COMMAND ORGANIZATION



**PERSONNEL COMPLEMENT (Includes MILITARY)

*ORGANIZATIONAL CODE

FIGURE 1-1 (Cont'd.)

(As of January, 1979)

PLANNING DEPARTMENT

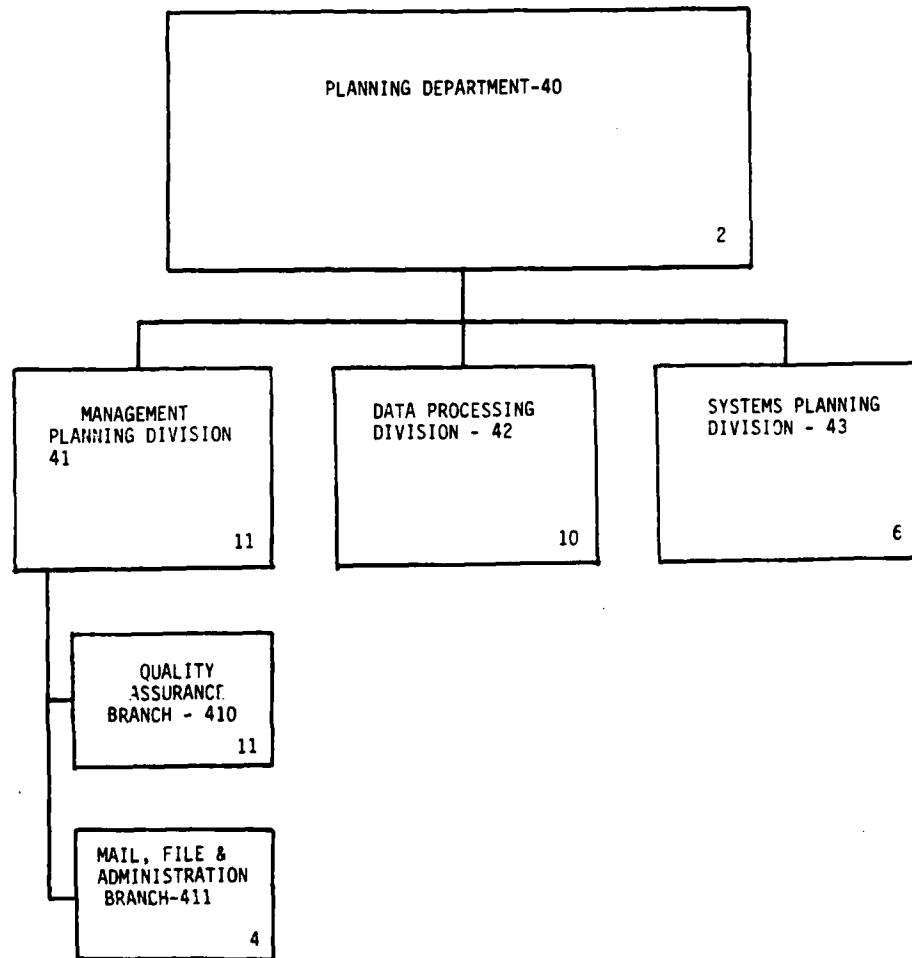


FIGURE 1-1 (Cont'd.)

(As of January, 1979)

COMPTROLLER DEPARTMENT

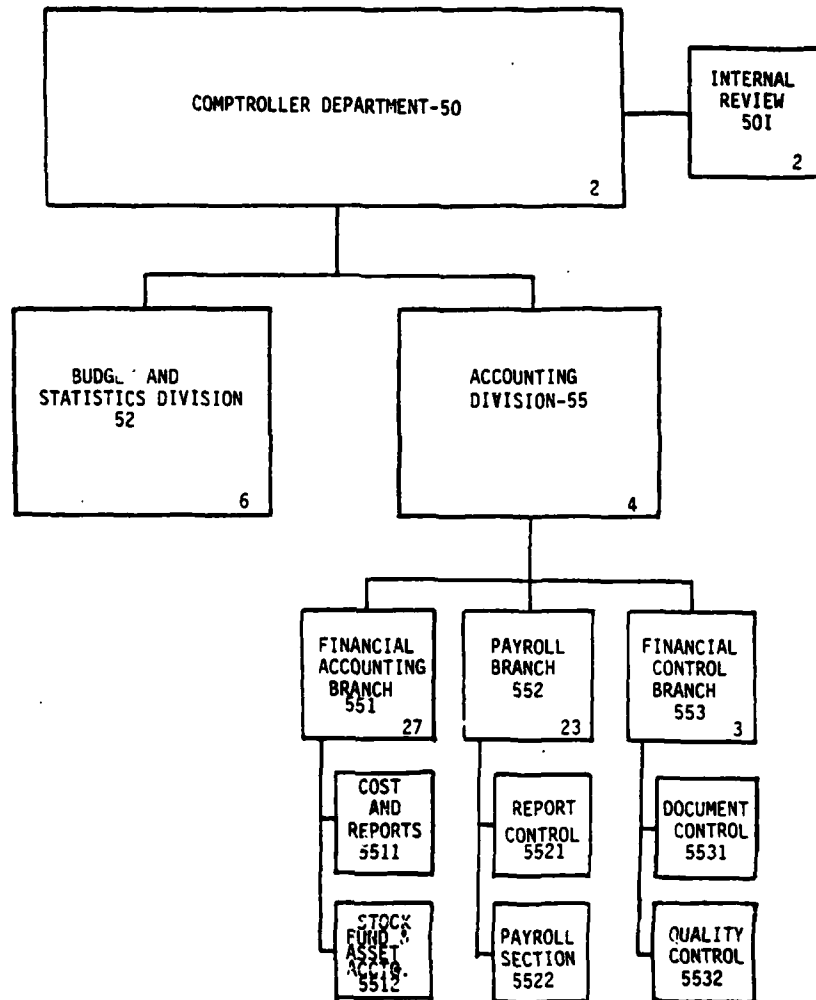


FIGURE 1-1 (Cont'd.)

(As of January, 1979)

INVENTORY CONTROL DEPARTMENT

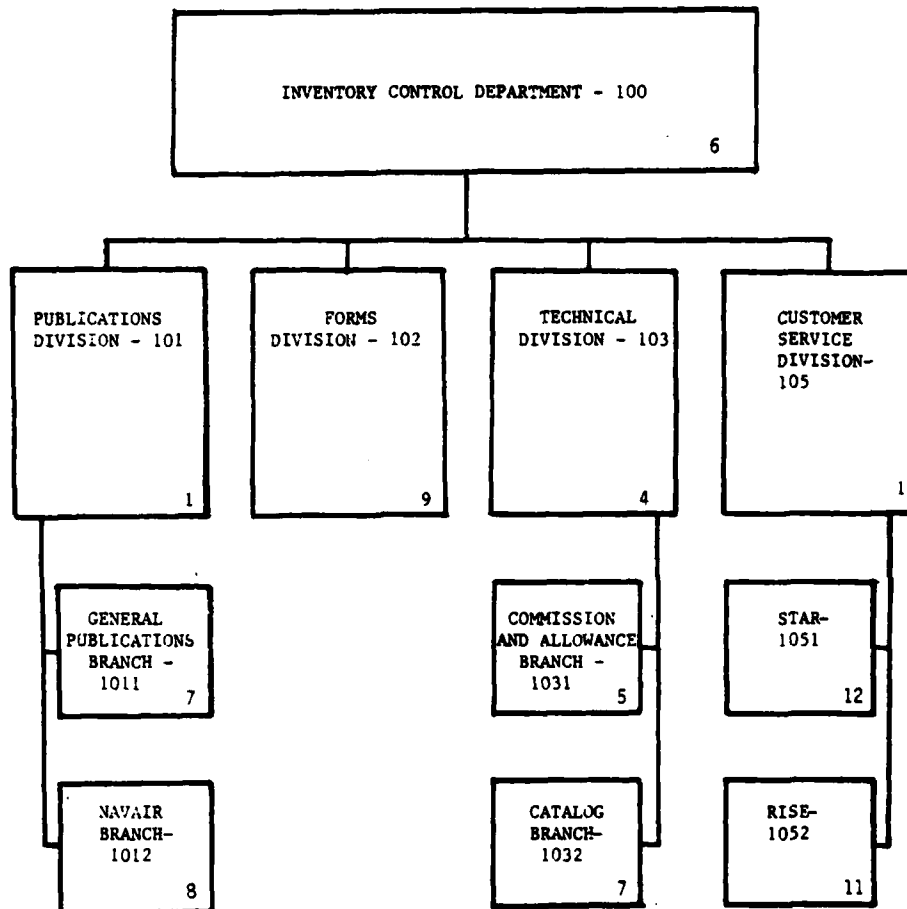


FIGURE 1-1 (Cont'd.)

(As of January, 1979)

MATERIAL DEPARTMENT

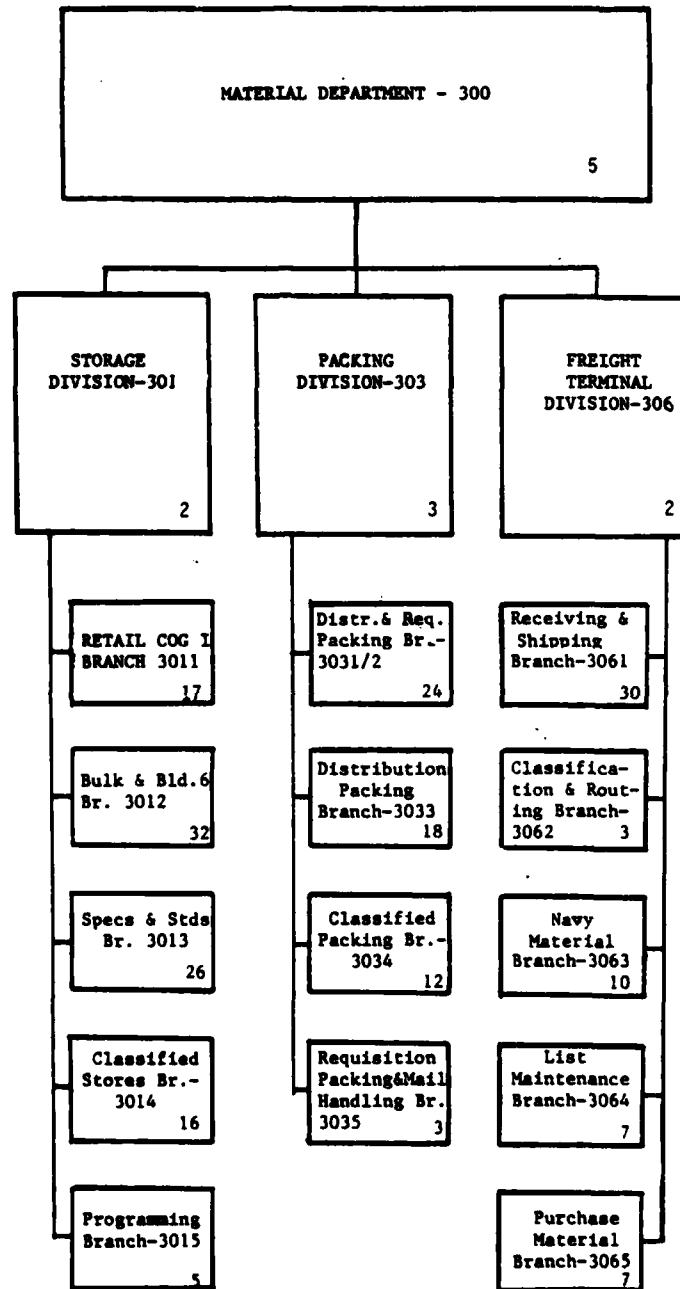


TABLE 1-1a ESTIMATED NPFC STAFF RESOURCES ALLOCATED TO WAREHOUSE CONTROLLED ITEMS

Organizational Unit and Code	Assigned Compliment (Includes Military)	Staff for Warehouse Controlled Items		Joint Staff (COC I and Warehouse Controlled) Allocated To Warehouse Controlled Items	Allocated Total Staff (Warehouse Controlled Items)
		Direct Labor	Administrative/ Indirect		
NPFC Command (0/00)	3			0.5	0.5
EEO-AAP (09)	2			0.5	0.5
Planning Department (40)	44	1	2	1	4
Comptroller Department (50)	67		1		1
Inventory Department (100)	71	12.05	1.23	1.08	14.36
Material Department (300)	222	43	9.25	2.25	54.5
TOTALS	409	56.05	13.48	5.33	74.86

*Source: NPFC

Table 1-2 Summary of NPFC Operational Highlights*

- Personnel complement (including Military) - 406
- Average number of issues per month
 - Publications and Forms (COG I Items) - 141,000
 - Specifications and Standards - 229,000
 - Department Directives (Navy Instructions) - 40,000
 - Other Warehouse Controlled Items - 50,000
- Average number of commissionings supported per month - 62
- Average number of COG I items distributed per month - 568
- Average number of specifications and standards distributed per month - 2,271
- Average receiving/shipping functions activity per month
 - Measurement tons recieved - 6,148**
 - Measurement tons shipped - 4,559**
 - Line items received - 6,199
- Document disposal activity
 - Measurement tons (1976) - 5,000
 - Measurement tons (1977) - 4,065
 - Measurement tons (1978) - 2,134
- Number of address lists maintained - 3,572
- Number of addresses on file - 503,329

*Source: NPFC (1977 data unless otherwise mentioned).

**The differential of 1500 measurement tons is due to the fact that NPFC receives locally consumable materials such as ASO Data Processing Center supplies, material destined for the ASO Public Works Division, desks and furniture for ASO activities and DMA Distribution Center Stock. It is not a measure of the inventory build up.

achieved if NPFC can accurately respond to customer needs in a "quick turnaround time" mode. There have been some developments in recent years that have contributed to adjusting NPFC's order processing time for routine warehouse controlled item requests from a maximum of two days to five days. This development can be attributed, in part, to the continued reduction in the number of billets authorized for NPFC because of budgetary constraints.

The overall document disposal volume at NPFC is about 2100 to 2400 measurement tons a year, for both COG I and warehouse controlled items. According to NPFC's estimates, approximately 5 to 20 percent of this volume represents the disposal activity for the warehouse controlled items. This amounts to about 105 to 240 measurement tons a year, which is equivalent to about 4 million to 10 million pages a year. This represents approximately 3 to 8 percent of the annual demand.

The specific objective of this particular study effort is to develop a baseline description of current operations that can serve as a basis for evaluating potential automation alternatives to performing the present NPFC tasks. Potential automation technologies may include order processing mechanization, demand printing from micrographic or digital computer data base, and the use of micrographics in lieu of paper copy. This study was aimed at providing baseline data for follow-up cost and performance analyses studies.

The overall baseline study was conducted in two phases. Specific analysis activities covered under Phase I of the effort and documented in this volume included the following:

- a. Functional description of the order processing activities as they currently operate.
- b. Estimation of demand for NPFC services based on characterization of customer base and analysis of customer orders.
- c. Characterization of stocked documents based on the analysis of the physical characteristics of selected documents.

- d. Identification of relevant performance measures that can be used to analyze NPFC operations and suggestions for baseline modifications.

Specific efforts under Phase II, which are documented in Volume II under a separate cover, included the following activities:

- a. Development of the cost estimates for major NPFC operations for warehouse controlled documents.
- b. Development of additional baseline data for NPFC activities related to warehouse controlled documents which included:
 - Estimation of the number of line items managed by NPFC under each major document category.
 - Document disposal activities/volumes.
 - Geographic distribution of demand by major document category.
 - NPFC interface with the Document Preparing Activities to identify data sources which can be tapped in the future for describing the document preparation process.
- c. Development of cost and volume data for NPPSO operations in support of NPFC's warehouse controlled documents.

The level of overall effort required to address major task areas under both phases outlined above was governed by the availability of data from NPFC and the project budget. The overall approach used for performing the study and specific results attained are presented in the applicable sections of the report.

Specific sections covered in this document include the following:

Section 2.0 - An Overview of Major Analysis Areas

Section 3.0 - Functional Description of Current Operations

Section 4.0 - Data Collection, Summarization and Analysis

Section 5.0 - Objectives and Measures of Performance of NPFC Operations

Section 6.0 - Suggestions for Baseline Modifications of NPFC Operations

Section 7.0 - Study Conclusions and Recommendations

Each of these sections are discussed in detail in the following pages of this report.

2.0 AN OVERVIEW OF MAJOR ANALYSIS AREAS

2.1 Introduction

This section is primarily aimed at identifying various areas in which specific data collection and analysis work was performed as part of the overall study effort. At the outset, it should be pointed out that NPFC is a relatively large operation encompassing a wide variety of functions and activities. This being the case, extensive efforts were required for the following:

- To get an overview of total operation and functional inter-relationships among its major components.
- To review the availability of information from NPFC, and assess its relevancy in supporting the desired analytic work.
- To identify alternative sources and means of getting the necessary information, and the potential problem areas.

The major task areas to be addressed under this study effort were identified in the preceding section. A number of specific data collection and analysis areas and activities that were necessary to support individual tasks are summarized in Exhibit 2-1. This exhibit also identifies the specific types of documents that were covered under each analysis area. It is obvious from the exhibit that the functional description of order processing operations was to include COG I items (Publications and Forms) and classified documents in addition to the warehouse controlled items. Otherwise, the analytical work was to focus on warehouse controlled items specifically listed in the preceding section (Section 1.0).

Each of the specific analysis areas included in the exhibit are presented in detail in the sections listed opposite to each area. Each of the

Exhibit 2-1 An Overview of Major Analysis Areas

Major Task Description	Specific Analysis Areas Covered	Report Section	Document Areas		
			Warehouse Controlled	COG I Items	Classified Items
a. Functional Description of Order Processing Activities by Document Category	1. Flowcharting of Operations	Section 3.2	X	X	X
	2. Description of Operations in terms of Elapsed times	Section 4.5 4.6	X		
b. Estimate of Demand for NPFC Services Based on Characterization of Customer Base and Analysis of Orders	1. Comprehensive Analysis of Customer Orders	Section 4.1	X		
	2. Analysis of Procurement History Records	Section 4.2	X		
	3. Survey of NPFC Customers	Section 4.5	X		
	4. Estimated Current Demand by Customer and Document Categories	Section 4.7	X		
c. Characterization of NPFC Document Base	1. Document Morphology Analysis	Section 4.3	X		
d. Development of Performance Measures and Suggestions for Baseline Modifications	1. Objectives and Measures of Performance	Section 5.0	X	X	X
	2. Suggested Baseline Modifications	Section 6.0	X		

analysis areas are organized to cover the following topics:

- Introduction
- Objectives of Analysis
- Data Collection Methodology
- Data Summarization and Analysis

A number of sources were tapped to obtain the necessary data. Significant among them included the following:

- a. Interviews with NPFC staff
- b. Review of available background materials
- c. Personal observation of NPFC operations
- d. NPFC Command History data
- e. Review and collection of available data and reports from NPFC that included daily workload tallies, production records, management feeder reports, time standards, job order codes, etc.
- f. Sampling of mail and phone orders
- g. Sampling of procurement records
- h. Sampling of documents (for morphological analysis)
- i. Placing of orders to NPFC to assess responsiveness

Before concluding this section, a few remarks related to some of the terminology used in this report are in order. The terms "Requisitions" and "Orders" are used interchangeably throughout this report. The term "Document Category" refers to the following classes of documents:

- Military Specifications
- Military Standards
- Data Item Descriptions (DIDs)
- Naval Instructions (Including DOD Directives)
- Qualified Products Lists (QPLs)
- Federal Specifications
- Federal Standards
- Industry Standardization Documents

These categories were used in the majority of the analysis areas. Occasionally, some of these categories may not be included because of non-availability of specific data for a given category or because the available data was in an aggregate form.

The customers requesting NPFC services were categorized in major groups. The specific "Customer Categories" used in this report refer to the following:

- Department of Navy (Navy)
- Department of Army (Army)
- Department of Air Force (Air Force)
- Associated DOD Agencies (includes CIA, DPS, NSA, NATO and other DOD identified Organizations)
- Assorted Government Agencies (Non-DOD)
- Corporations/Private Organizations

- Assorted Non-Government organizations (includes Educational Institutions and Individuals)
- Foreign Military Organizations (ILP and National Organizations)
- Foreign Private Organizations

Again, a few of these categories may not be included in the analysis if required data was not available or encountered.

3.0 FUNCTIONAL DESCRIPTION OF CURRENT OPERATIONS

3.1 Introduction

The description of current NPFC operations is divided into two sections:

- Flowcharts and Description of Current Operations
- Summary of Available Workload Volumes, Hours and Costs

In Section 3.2 flowcharts depicting the issue of COG I material, classified documents, and warehouse controlled material are provided. Additional flowcharts, focusing on document storage, replenishment and management, are included in the description.

3.2 Flow Charts of Operations and Requisition Processing

3.2.1 Introduction

The analysis of current procedures utilized by NPFC required the identification of activity sequence. Selected requisition formats and administrative procedures are illustrated in the following flow charts. The charts are grouped into four major operational categories: Administration and Order Processing, Warehouse Controlled Operations, Publication and Forms Issue Operations, and Classified Material Issue Operations.

Administration and Order Processing

Administration of Documents

- 3.2-1 Introduction of a Line Item to DODISS and NPFC System
- 3.2-2 Receiving Printed Material, Specifications and Standards
- 3.2-3 Receiving and Processing a Reorder Level Card for Printing
- 3.2-4 Receiving and Storage of COG I Non-Classified Material
- 3.2-5 Initial Distribution of COG I Material
- 3.2-6 Requests for Specifications and Standards from a Foreign Country

Order Processing of Documents

- 3.2-7 Summary of Document Requisition Processing
- 3.2-8 DD-1348 Automated Requisition Processing
- 3.2-9 Phone Order Requisition Processing
- 3.2-10 Phone Order Requisition Processing (Detailed) for Material Orders Via DD-1348 Control MILSTRIP Network
- 3.2-11 Order Processing by Code 411-Mail and File Administration Branch.

Warehouse Controlled Operations

- 3.2-12 Initiation Activity for Bin Replenishment at 301-Storage Division
- 3.2-13 Bin Replenishment - from Bulk Stores
- 3.2-14 Requisition Processing When Order Exceeds Bin Capacity
- 3.2-15 Processing Requests for Unique Unclassified Navy Specifications

Publications and Forms Issue Operations

3.2-16 Processing Requisitions for Publications and Forms

Classified Material Issue Operations

3.2-17 Receipt and Storage of Classified Material

3.2-18 Initial Distribution of Classified Material

3.2-19 Issue of Classified Material

3.2-20 Issue of Secret Material from Bin Stocks

3.2-21 Certification of Issue of Classified Material to Non-DOD Organizations

3.2-22 Bin Replenishment of Secret Material and Serially Numbered Forms

3.2-23 Bin Replenishment of Confidential and "Y" Coded Material

3.2-24 Destruction of Classified Material

3.2.2 Objectives of Flow Charting NPFC Operations

The objective of identifying the sequence of activities was to provide for the assessment of operations. In addition, emphasis was directed at documenting:

- Specific operations and their sequence by document category
- Identification of sub-routines and activities comprising each operation and their sequence by document category

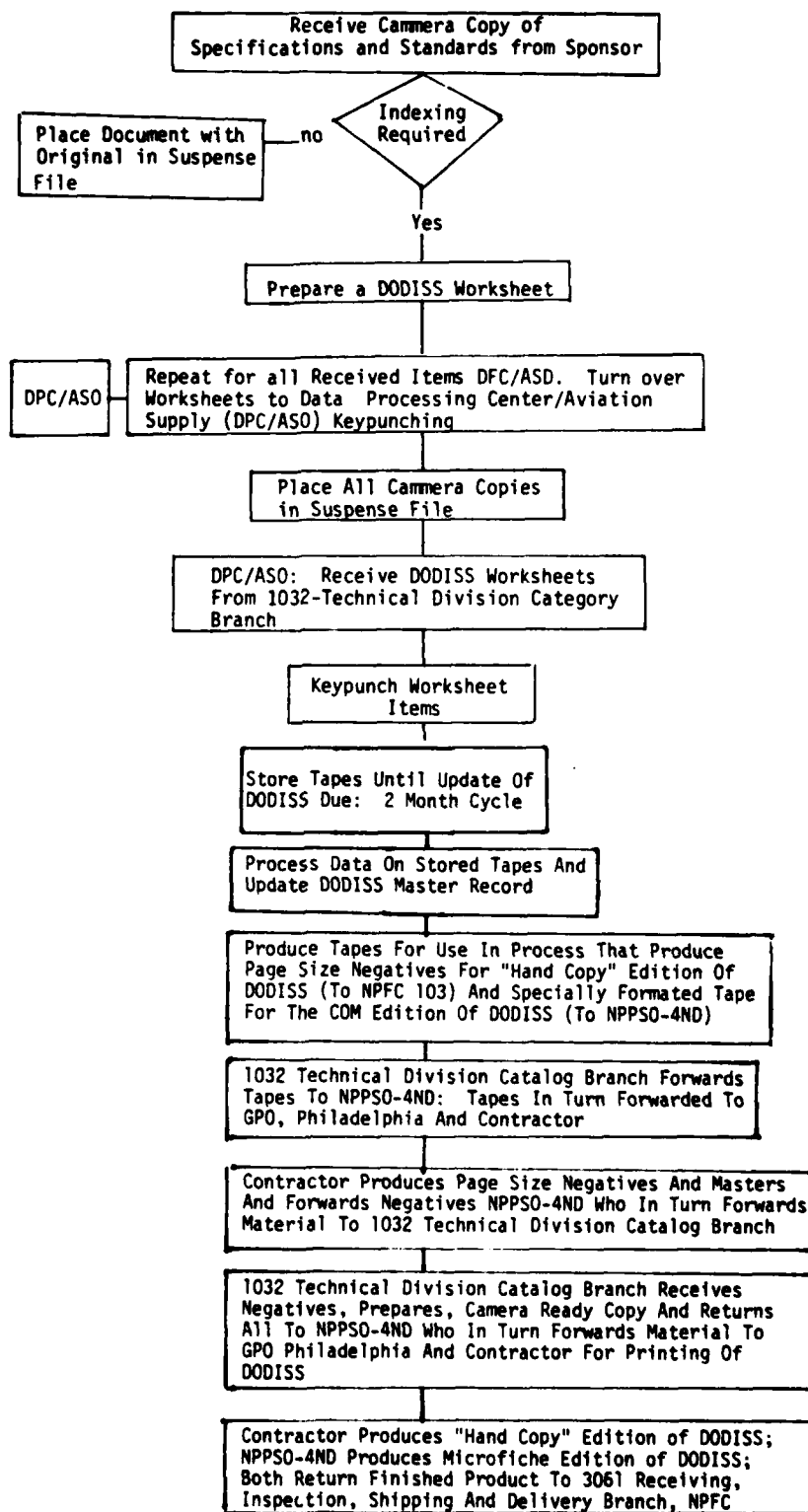
The listed flow charts provide a summary illustration of the primary activities of branches involved in administration and issue of stocked material.

3.2.3 Methodology

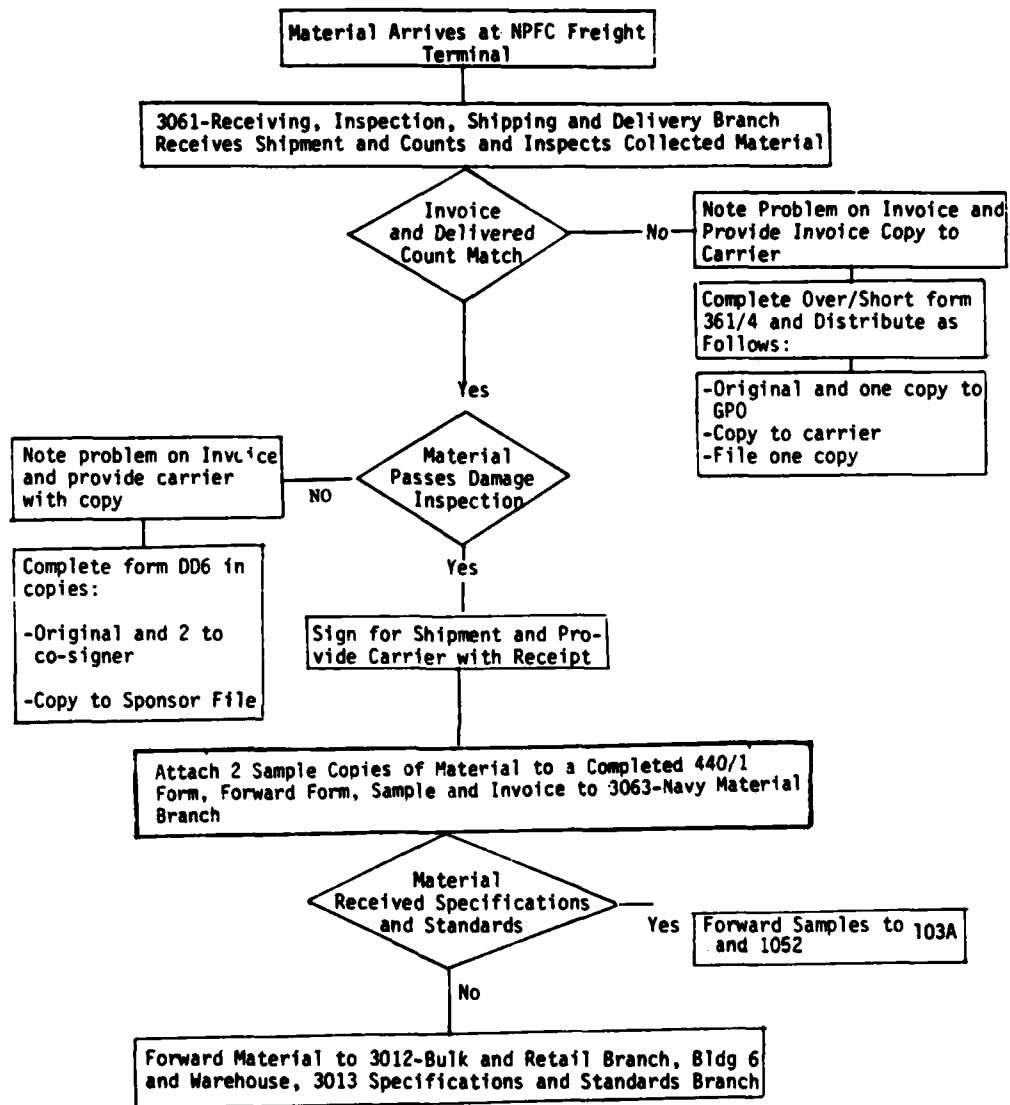
The procedures illustrated by the flow charts were identified by observation and review of the 4ND-NPFC, 4400, Operations Manual. Verification of

the identified sequences was provided by interviews with Branch and Division Directors and concurrent review by the staff of 43-Systems Planning Branch (Code 43).

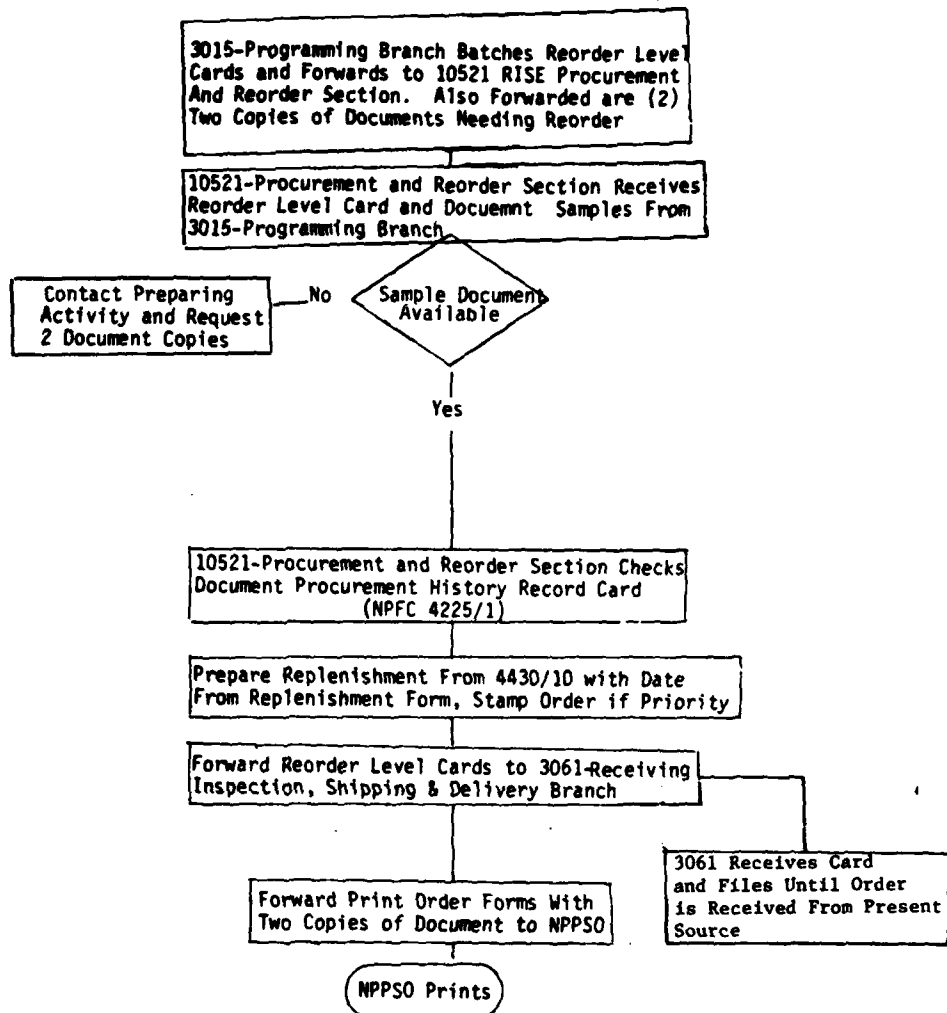
3.2-1 INTRODUCTION OF A LINE ITEM TO DODISS INDEX AND NPFC SYSTEM



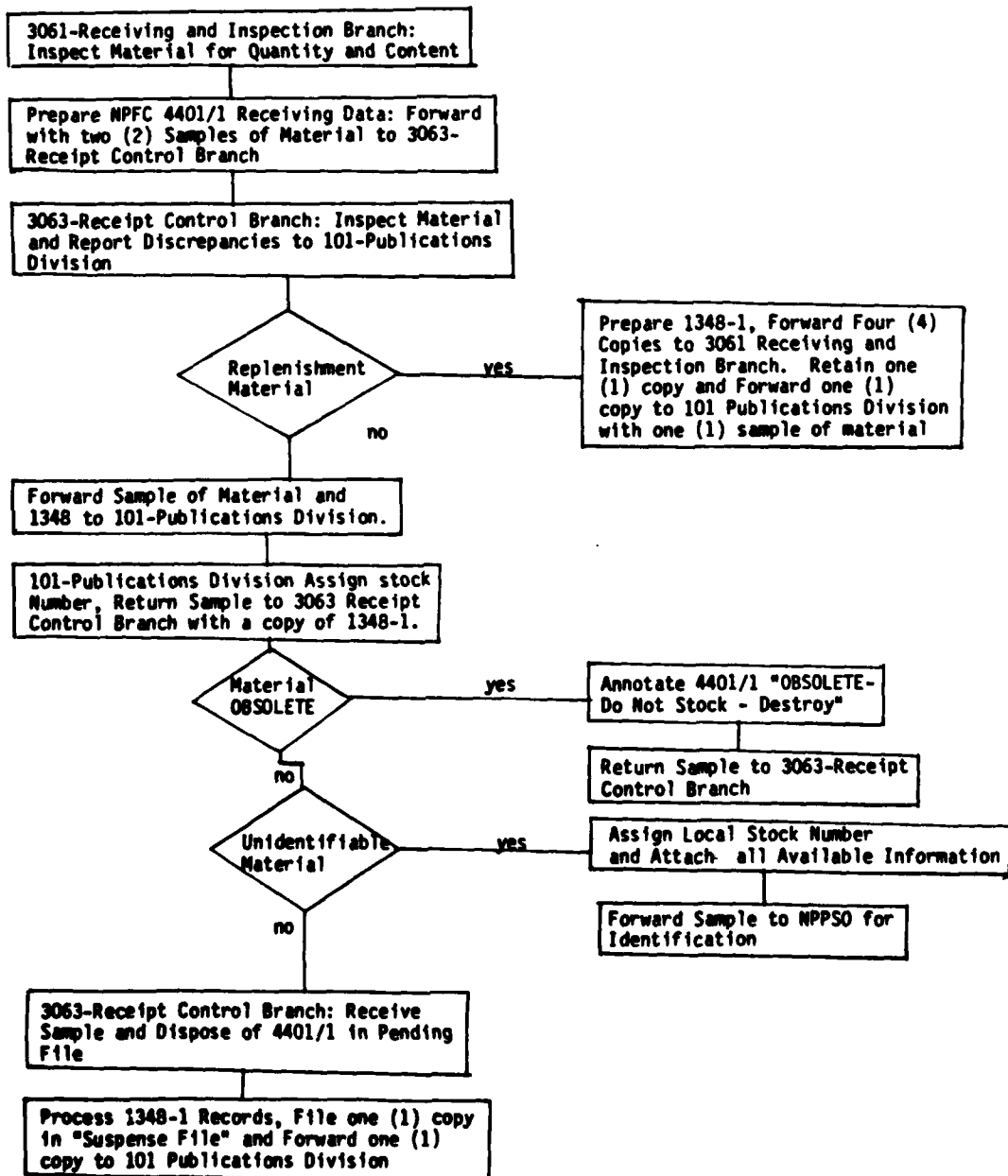
-3.2-2 Receiving Printed Material, Specifications and Standards



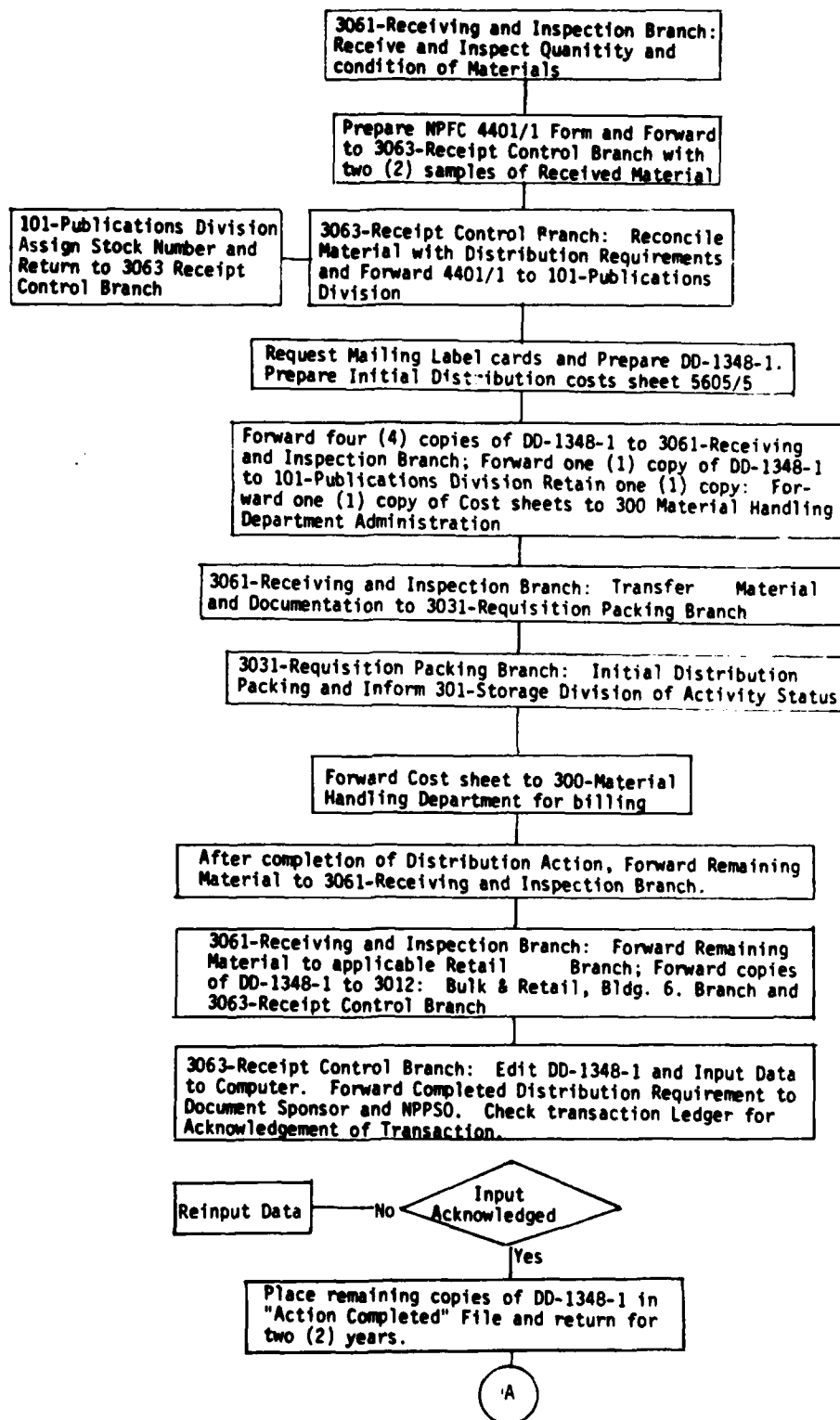
3.2-3 Receiving and Processing a Reorder Level Card for Printing



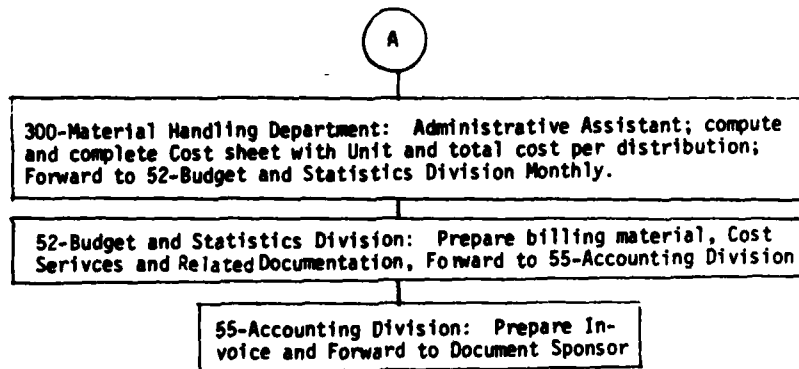
3.2-4 Receiving and Storage of COG I Non Classified Material



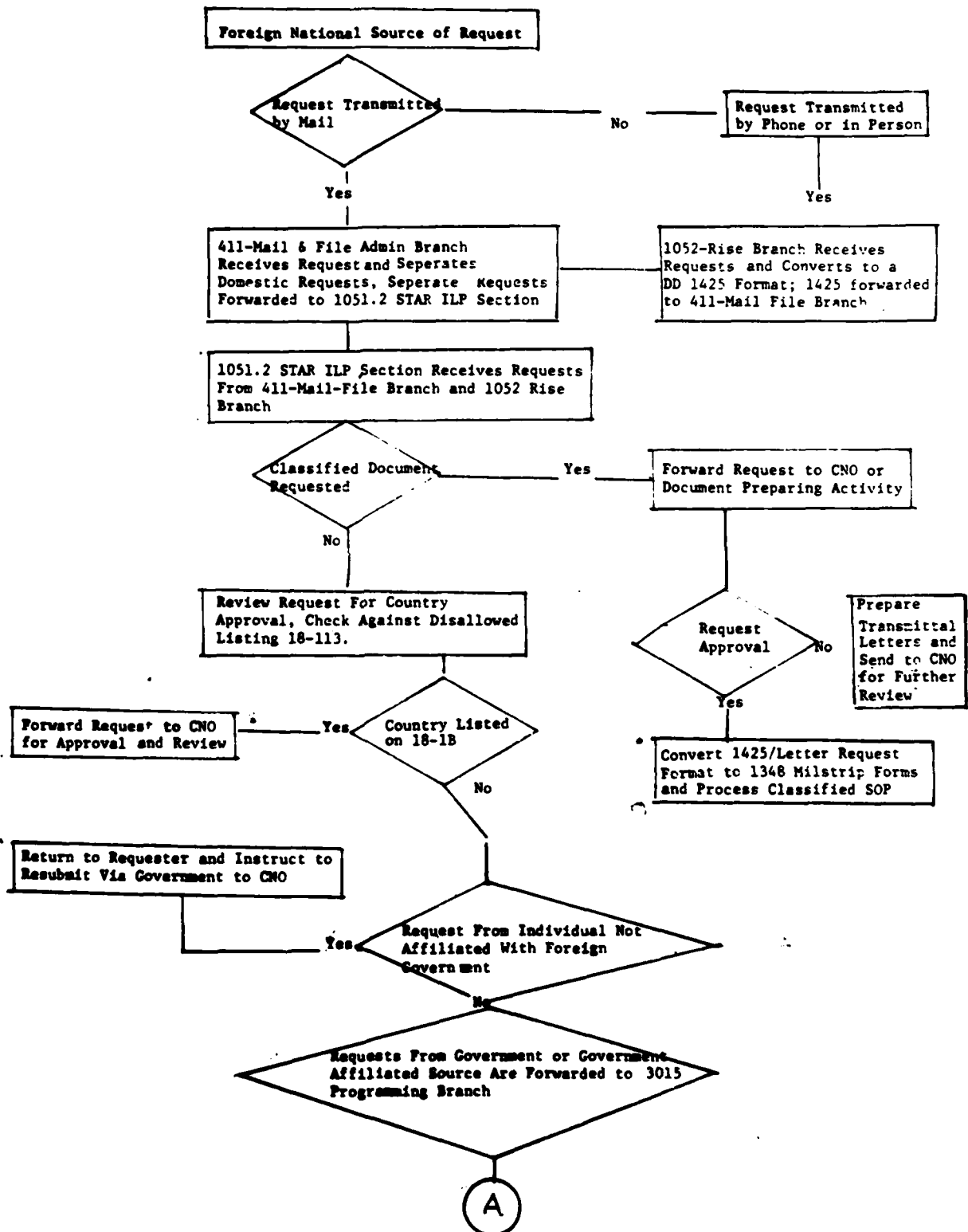
3.2-5 Initial Distribution of COG I Material



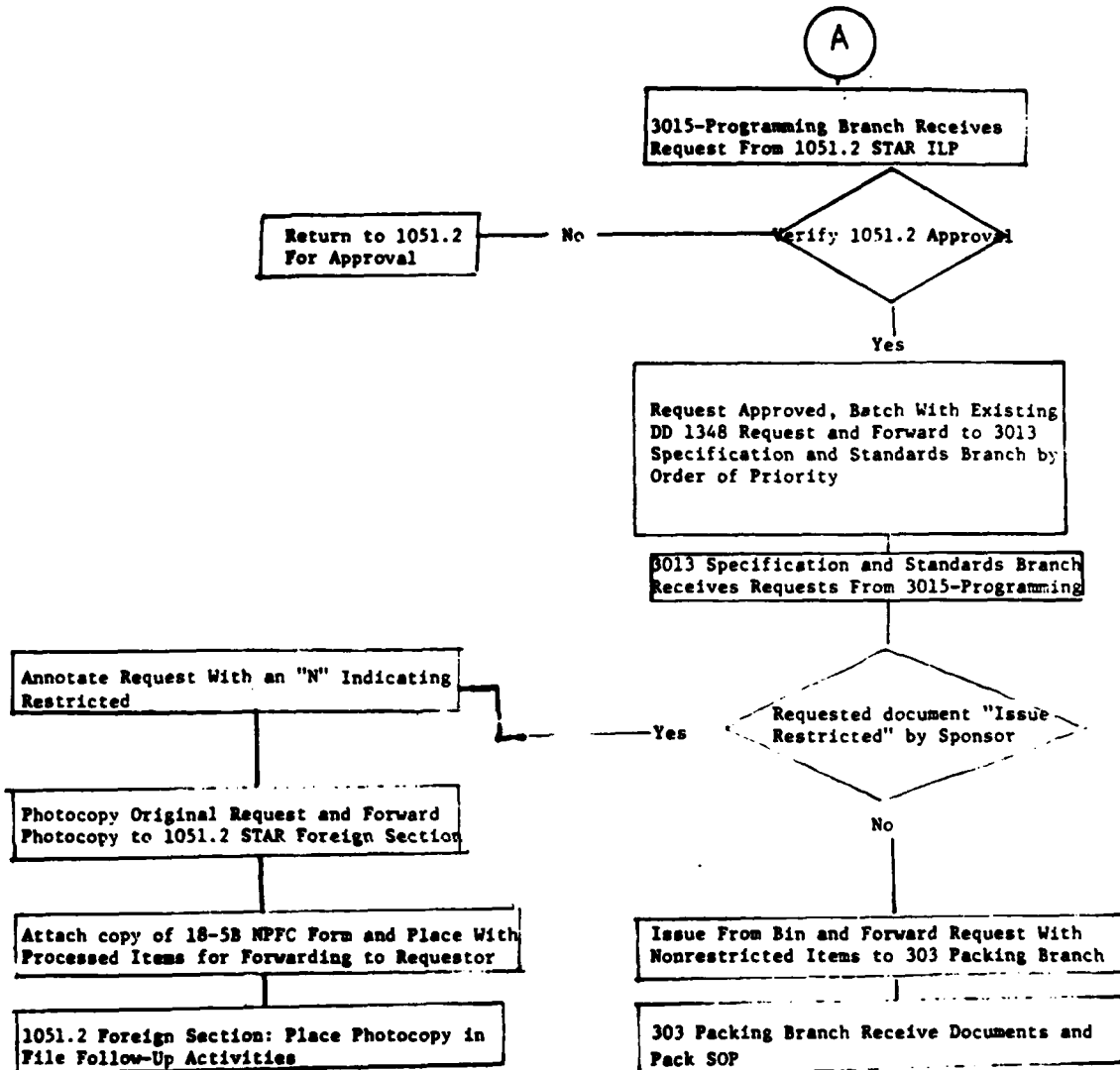
3.2-5 Initial Distribution of COG I Material (cont'd.)



3.2-6 REQUEST FOR SPECIFICATIONS AND STANDARDS BY A FOREIGN COUNTRY

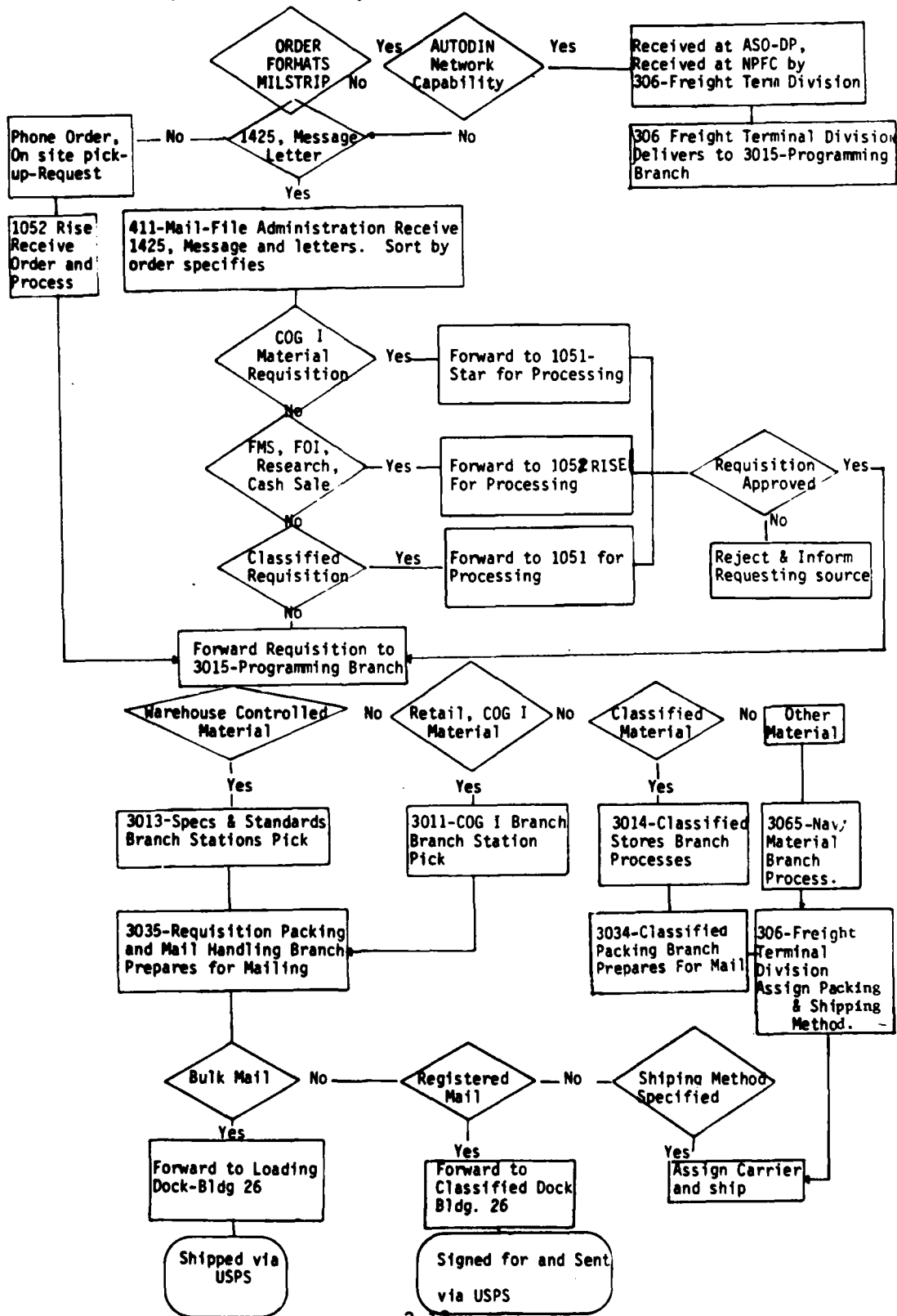


3.2-6 REQUEST FOR SPECIFICATIONS AND STANDARDS BY A FOREIGN COUNTRY (CONTD.)

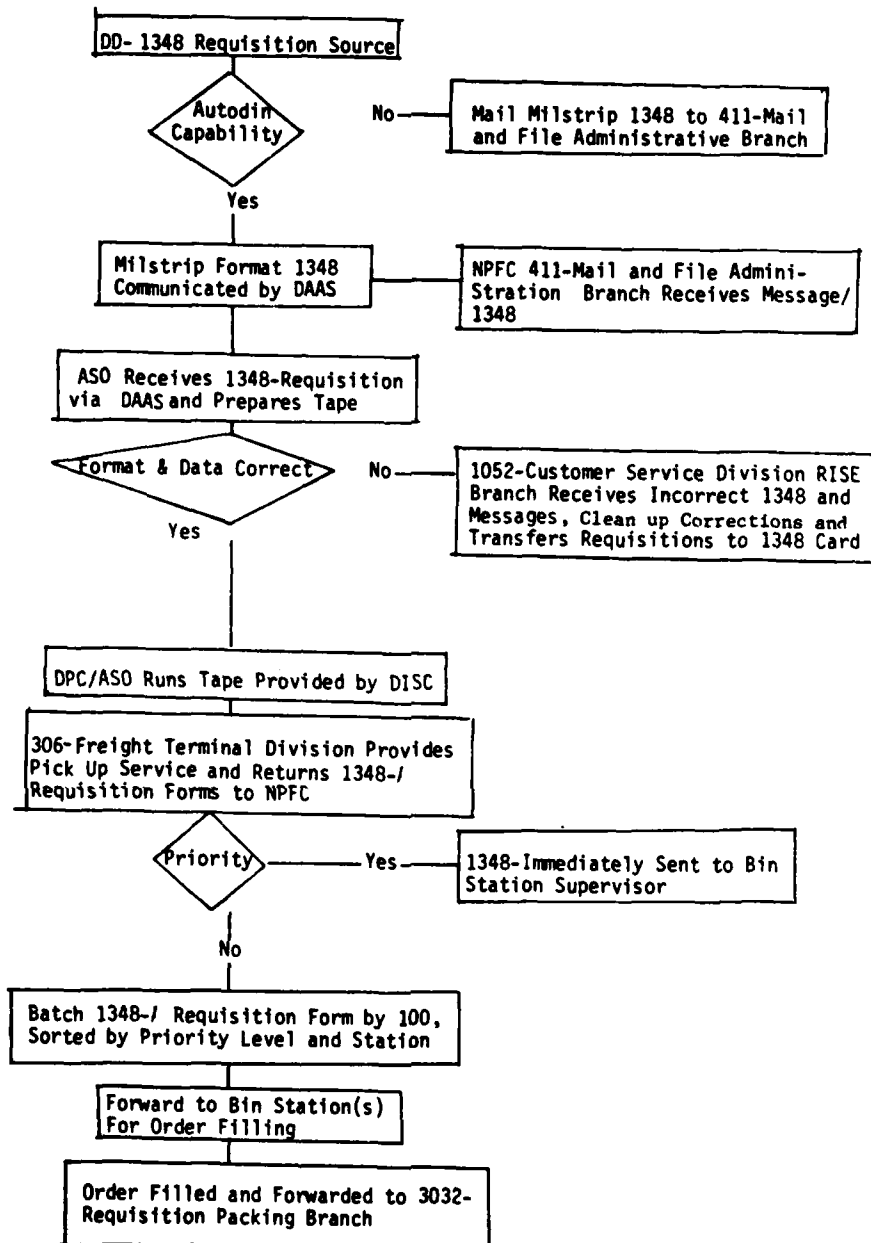


3.2-7 SUMMARY OF DOCUMENT REQUISITION PROCESSING

Requisition Initiated by Source



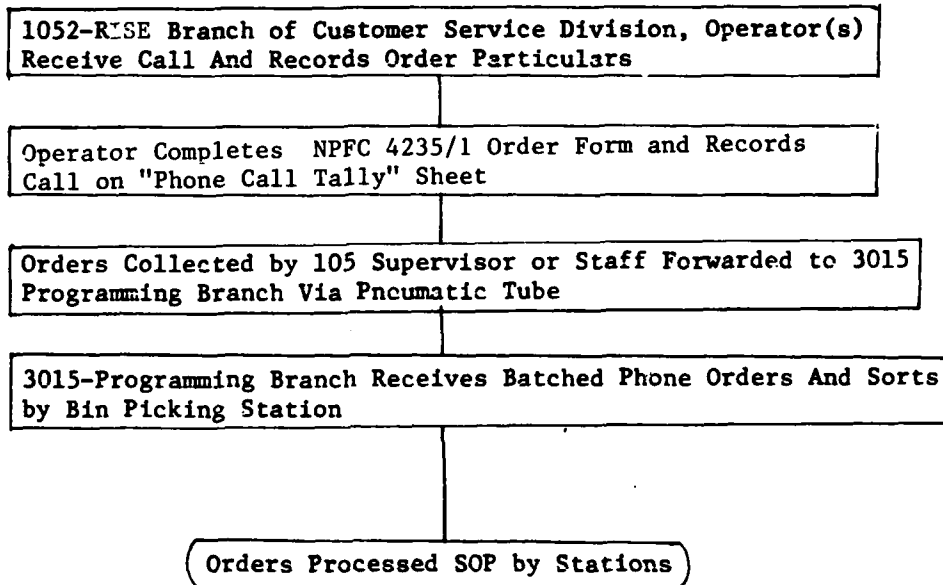
3.2-8 DD-1348 AUTOMATED REQUISITION PROCESSING



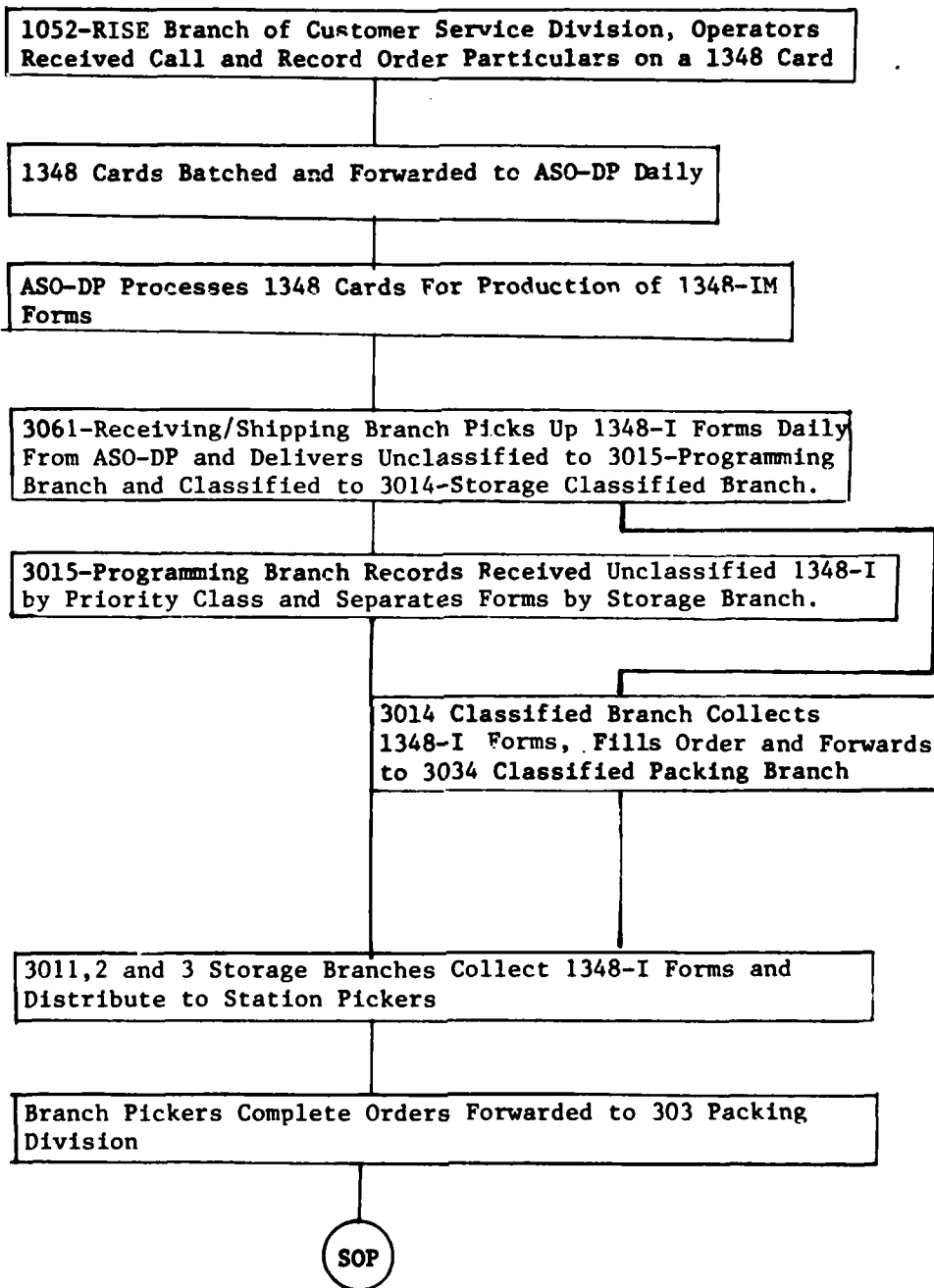
3.2-9

PHONE ORDER REQUISITION PROCESSING (DETAILED)

Specifications Standards, Directives and Other Warehouse Controlled Material

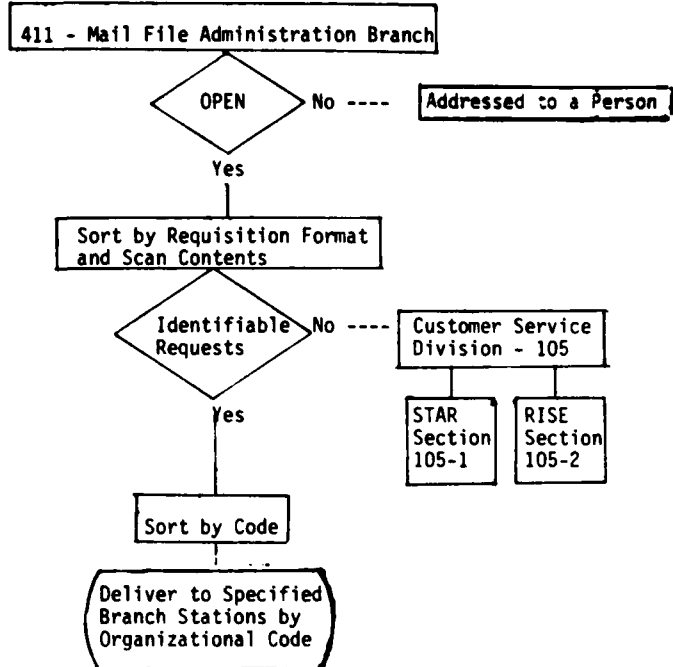


3.2-10 PHONE ORDER REQUISITION PROCESSING (DETAILED) FOR MATERIAL ORDERS
VIA DD-1348 CONTROL MILSTRIP NETWORK



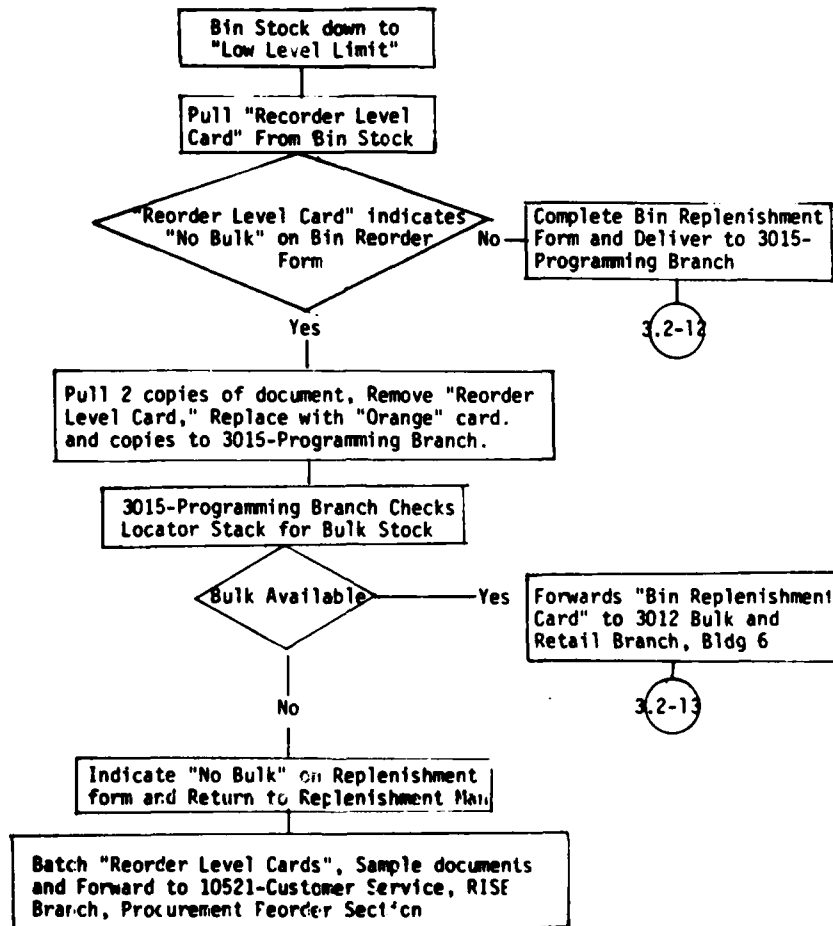
3.2-11 Order Processing By Mail And Administration Branch (code 411)

DISC ----- SOURCE ----- USPS

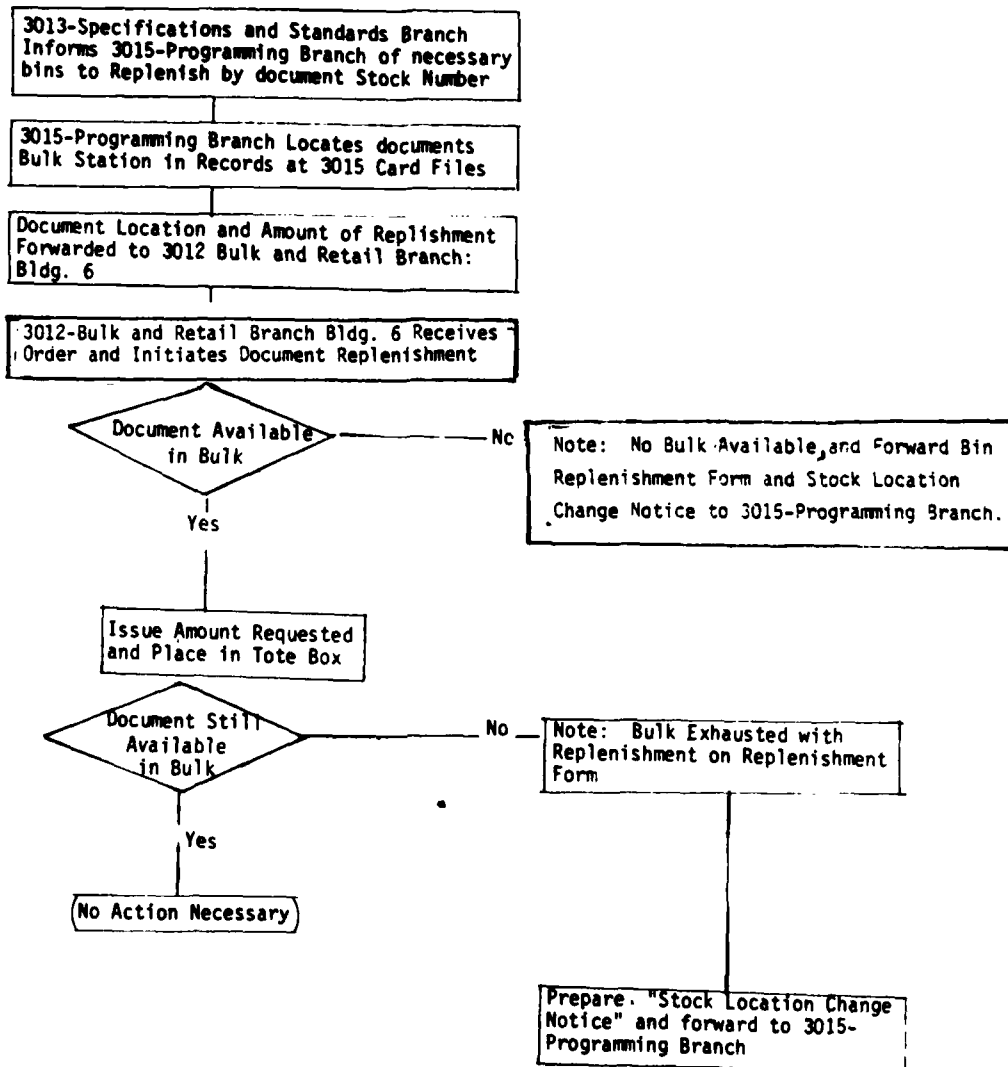


- o Mail and File Administration Branch - 411 receives all incoming correspondence from USPS for 1425, 1205 requisitions, letters Telex and code messages are received from DISC.
- o 411 Sorts by addressee, opens all but 3014-Classified Branch and Correspondence addressed to a person by name.
- o Delivers requisitions to Inventory Control, 105-Customer Service Division (FOI, FMS, cash sale, 1348 and Research Required).
- o 411 forwards identifiable Specification and Directives requisitions to 3015-Programming Branch.

3.2-12 Initiation Activity For Bin Replenishment - Warehouse Controlled Items (code 3013)

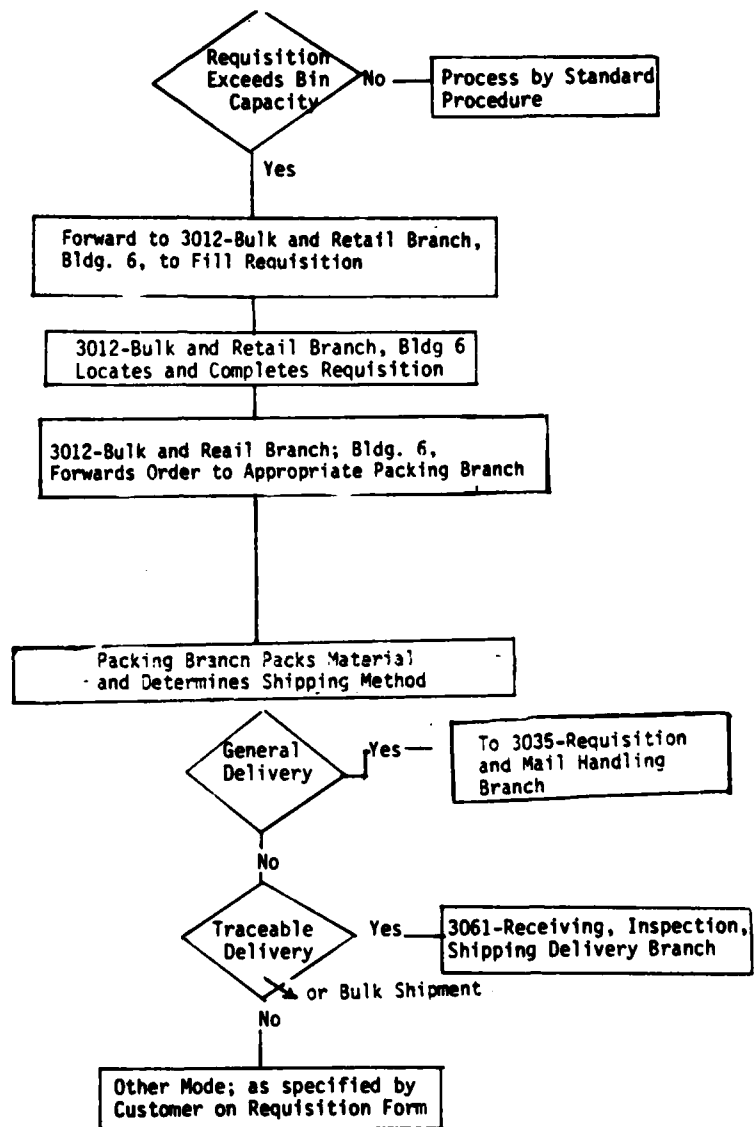


3.2-13 Bin Replenishment - From Bulk Stores

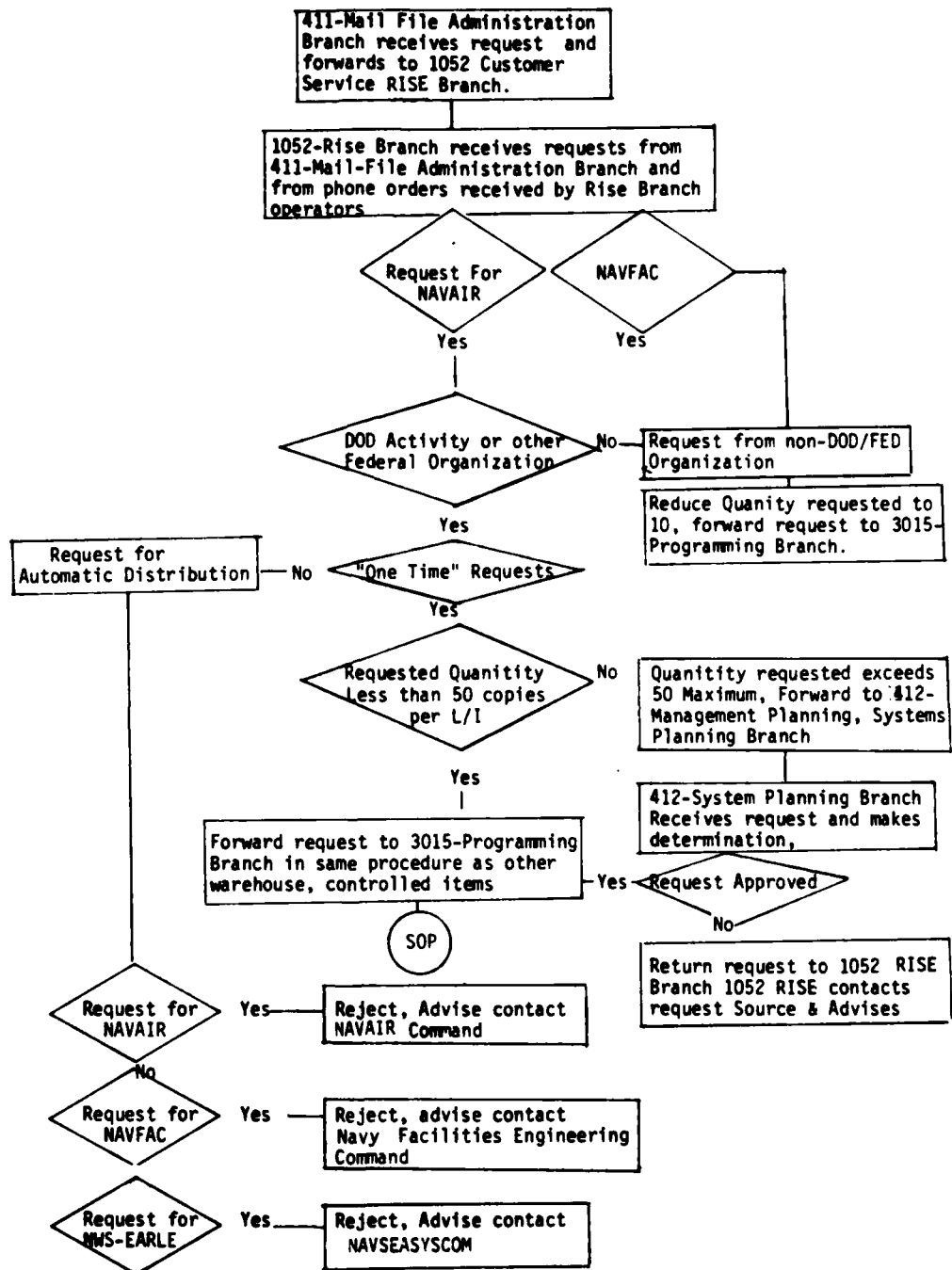


3.2-14 Requisition Processing When Order Exceeds Bin Capacity

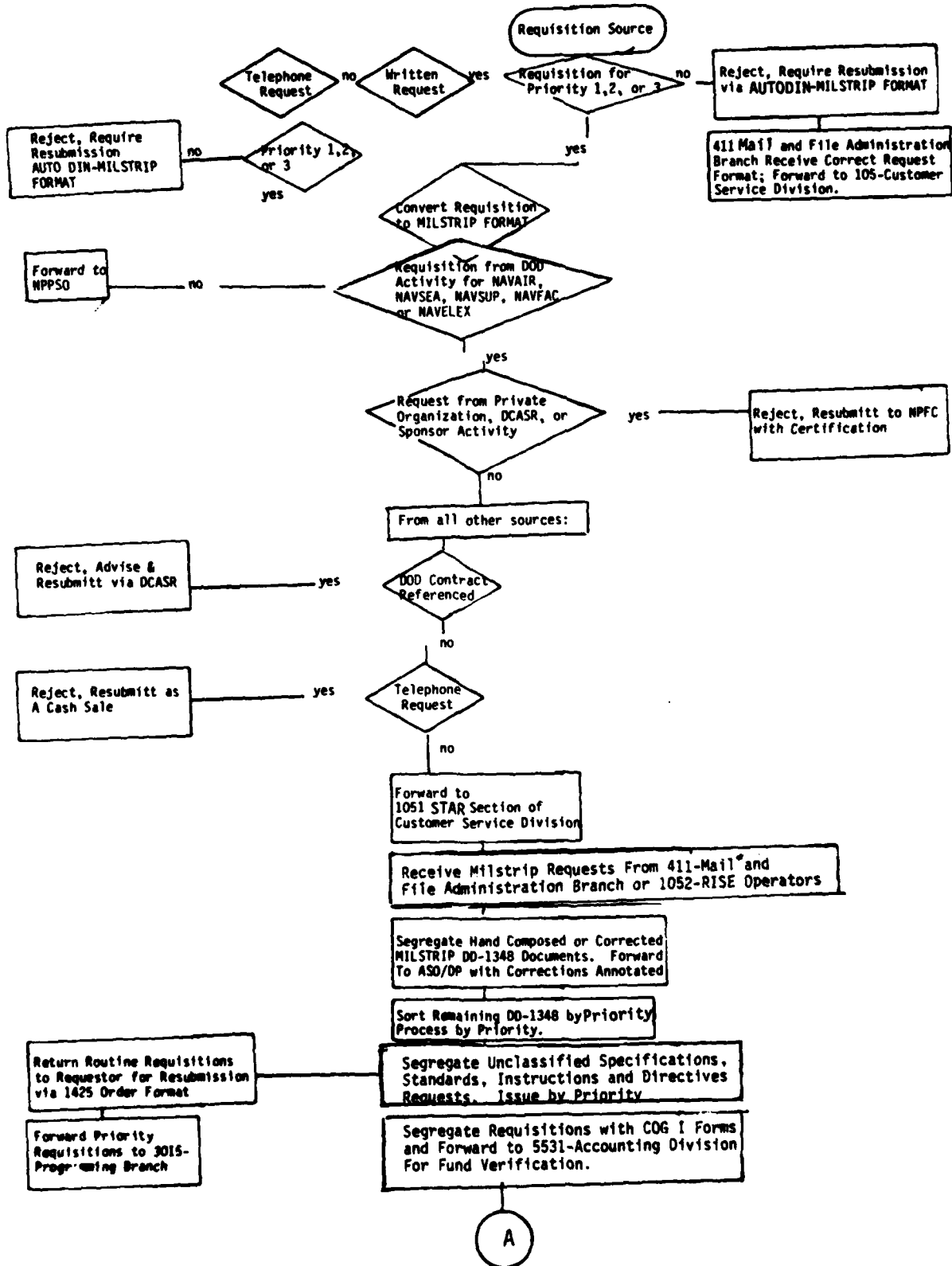
(Requisition in Retail Storage Branch)



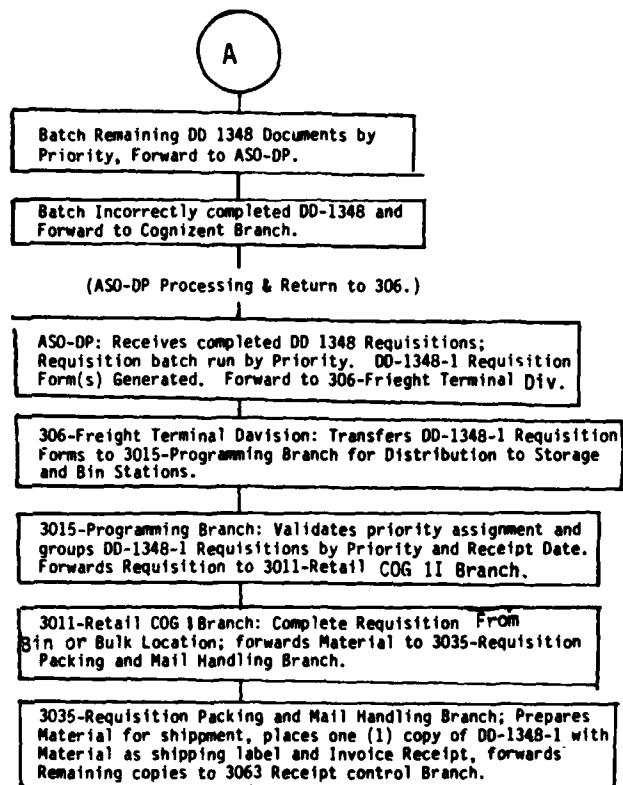
3.2-15 PROCESSING REQUESTS FOR UNIQUE UNCLASSIFIED NAVY SPECIFICATIONS



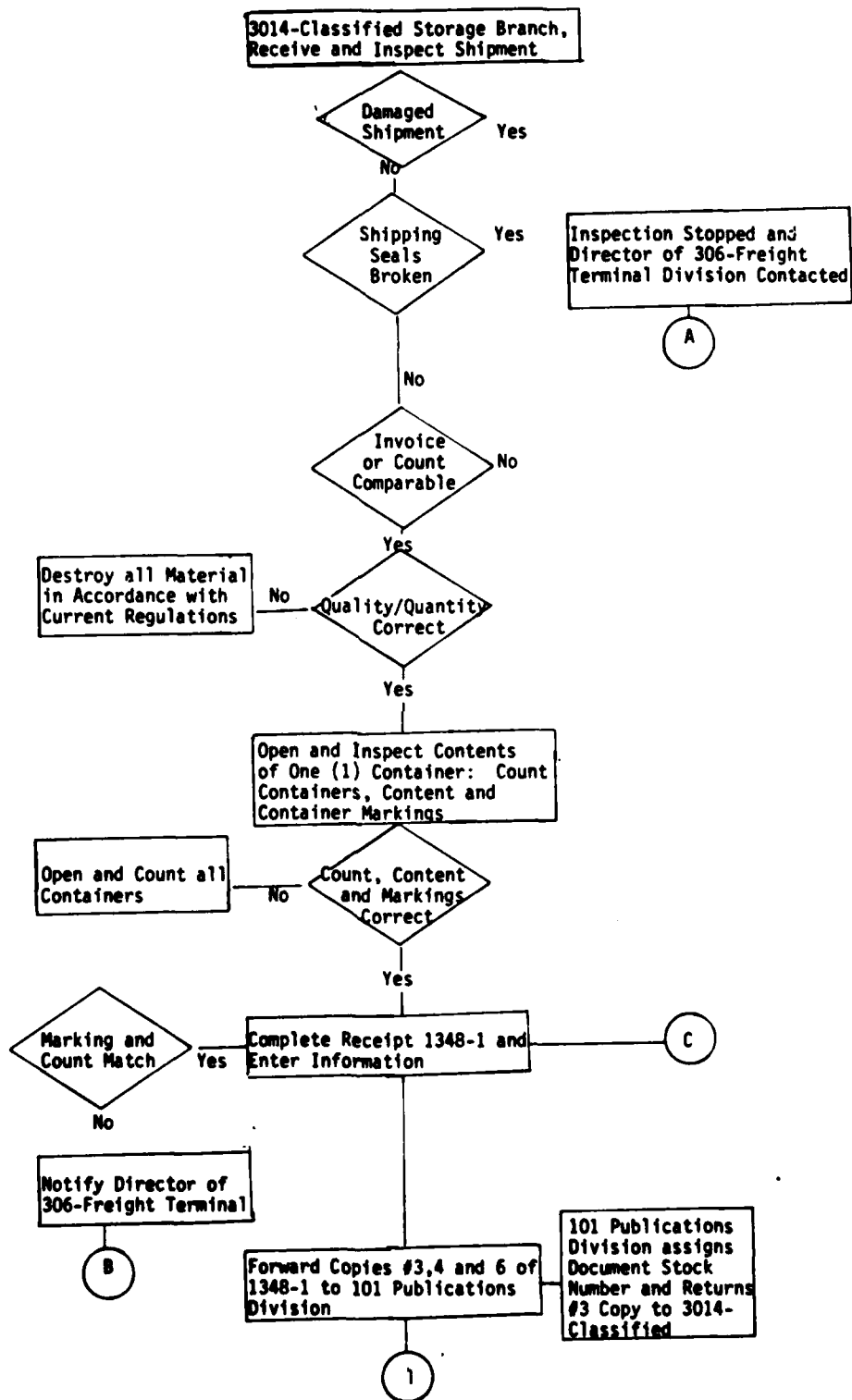
3.2-16 PROCESSING REQUISITIONS FOR PUBLICATIONS AND FORMS



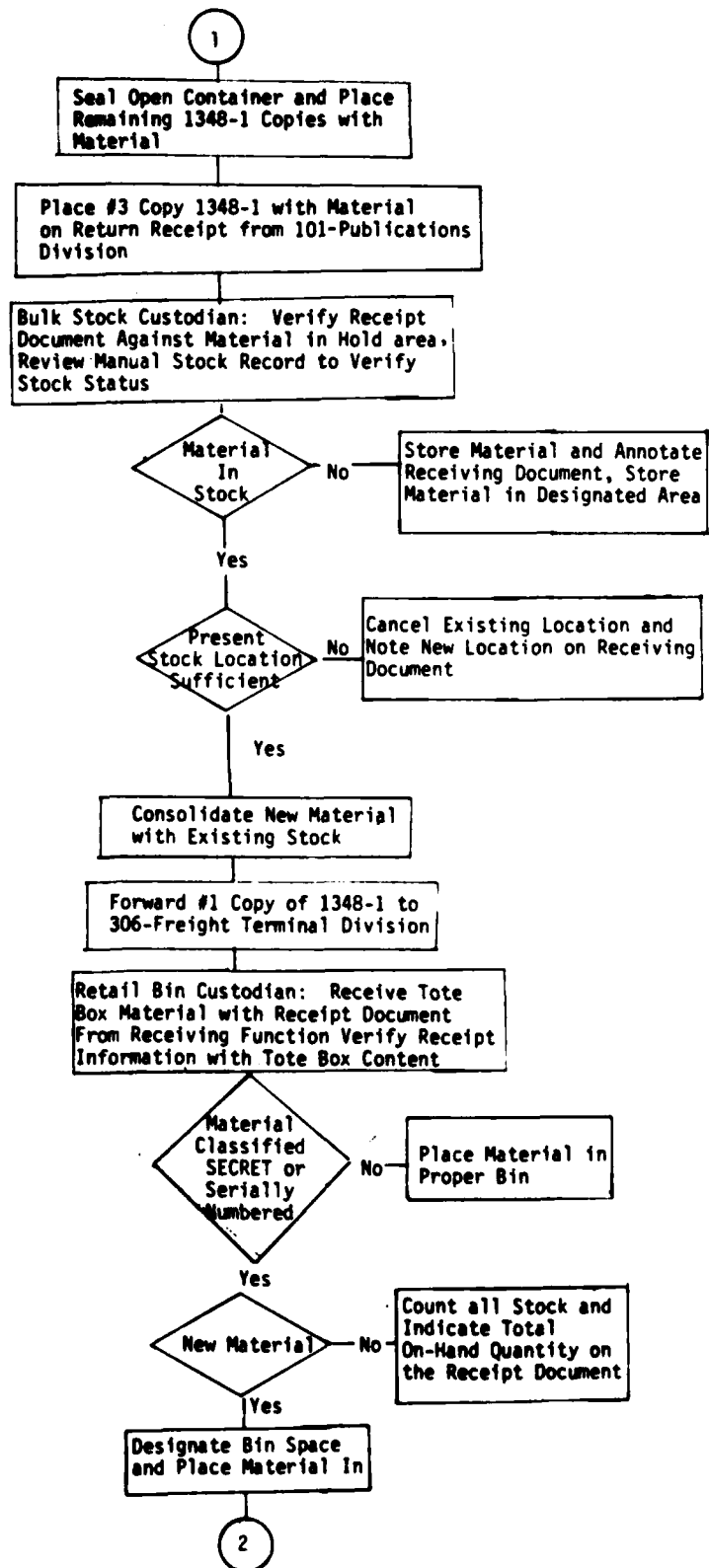
3.2-16 PROCESSING REQUISITIONS FOR PUBLICATIONS AND FORMS (Cont'd.)



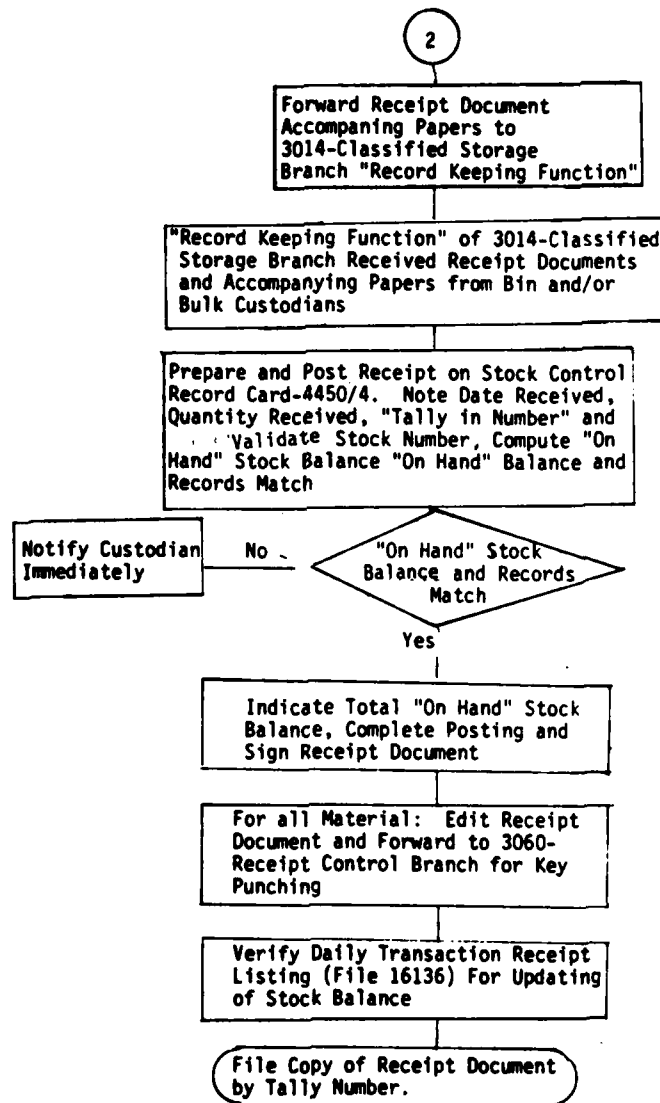
3.2-17 Receipt and Storage of Classified Material



3.2-17 RECEIPT AND STORAGE OF CLASSIFIED MATERIAL (Cont'd.)

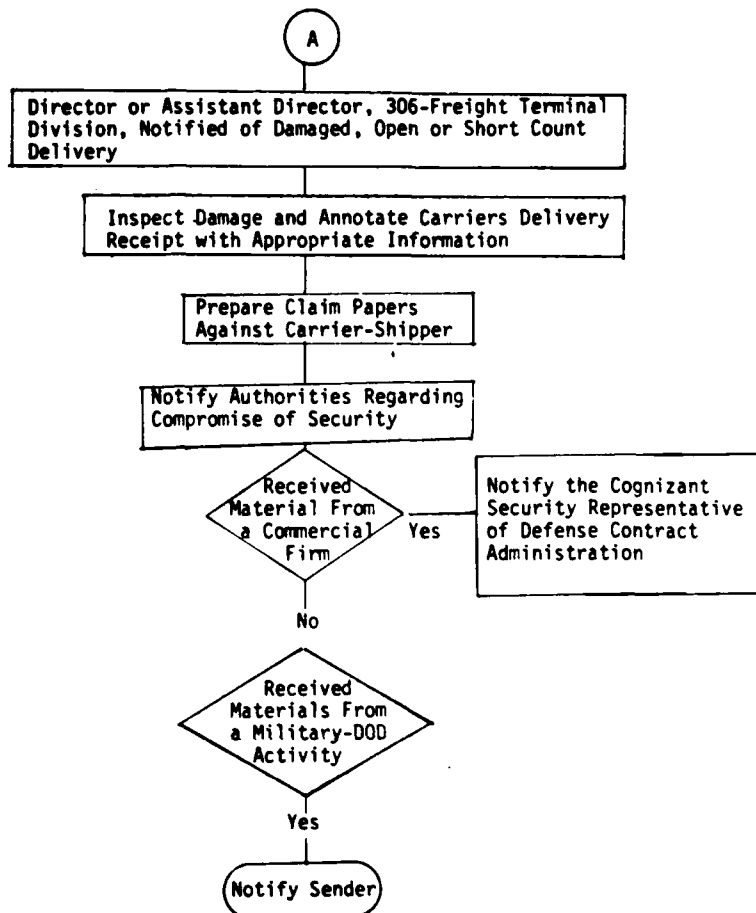


3.2-17 RECEIPT AND STORAGE OF CLASSIFIED MATERIAL (Cont'd.)



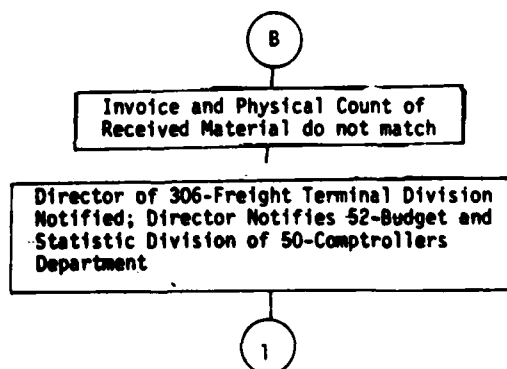
Subprocess A - Damaged Material (3.2-17 Cont'd.)

Subprocess A is initiated by a "stopped" inspection resulting from damaged material arriving at 3014-Classified Storage Branch.

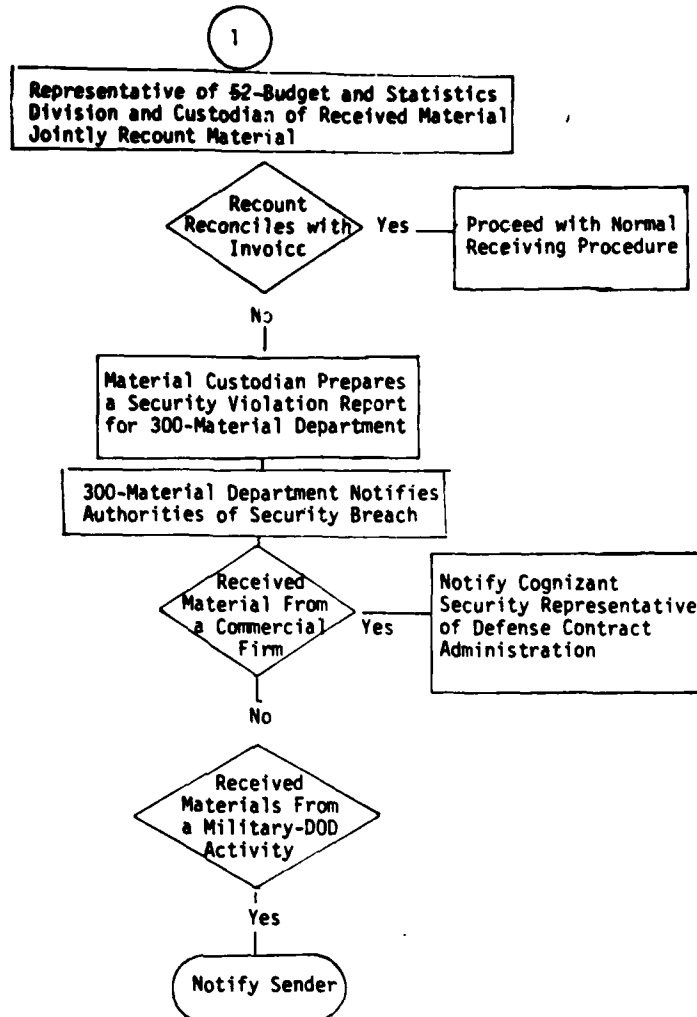


Subprocess B - Over/Short and Receipt of Material (3.2-17 Cont'd.)

Subprocess B is initiated by a inventory count of received material indicating a over/short receipt of material at 3014-Classified Storage Branch.

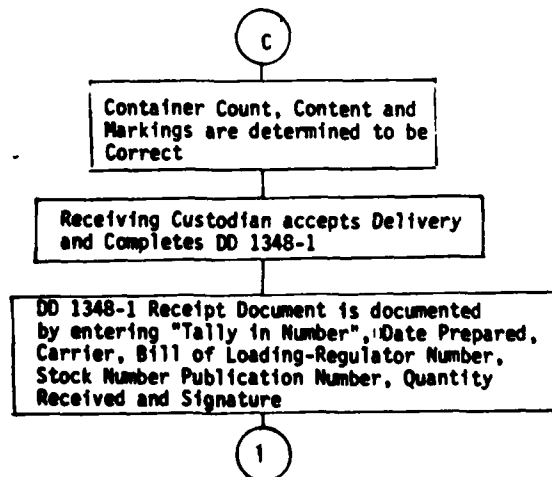


Subprocess B - Over/Short and Receipt of Material (3.2-17 Cont'd.)

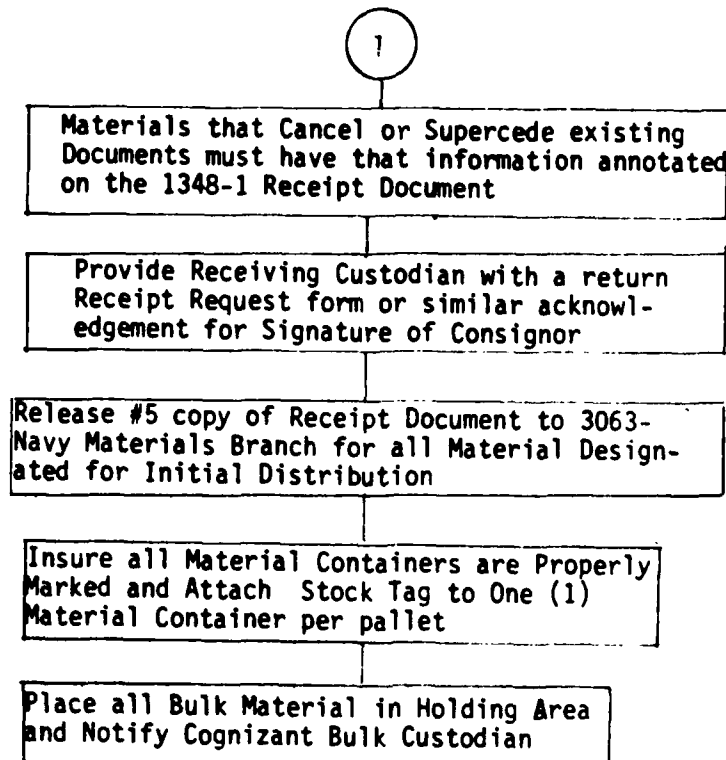


Subprocess C - Receipt and Document Processing (3.2-17 Cont'd.)

Subprocess C involves the preparation and completion of the DD 1348-1 Receipt Document initiated after inspection of the received material is determined acceptable.

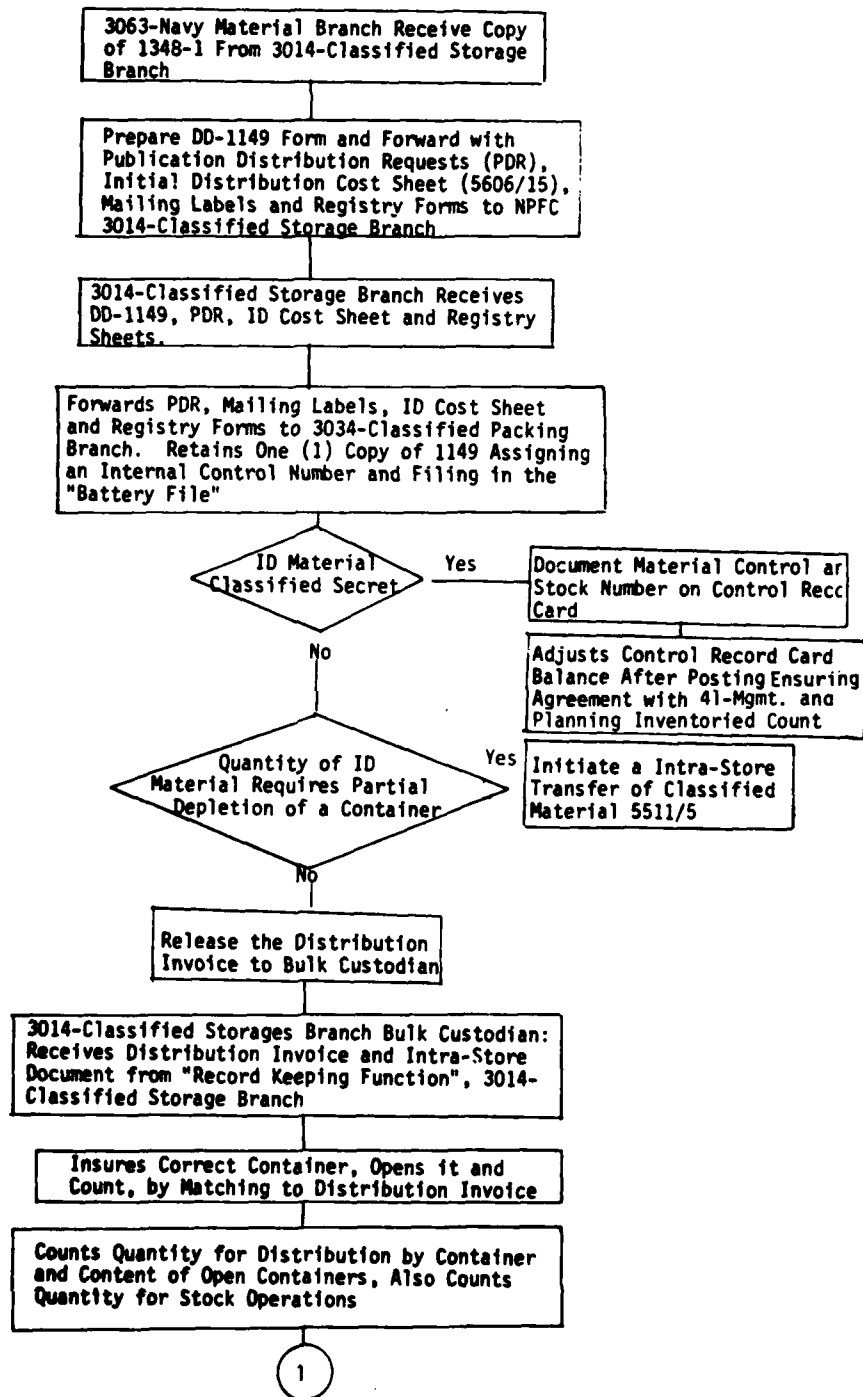


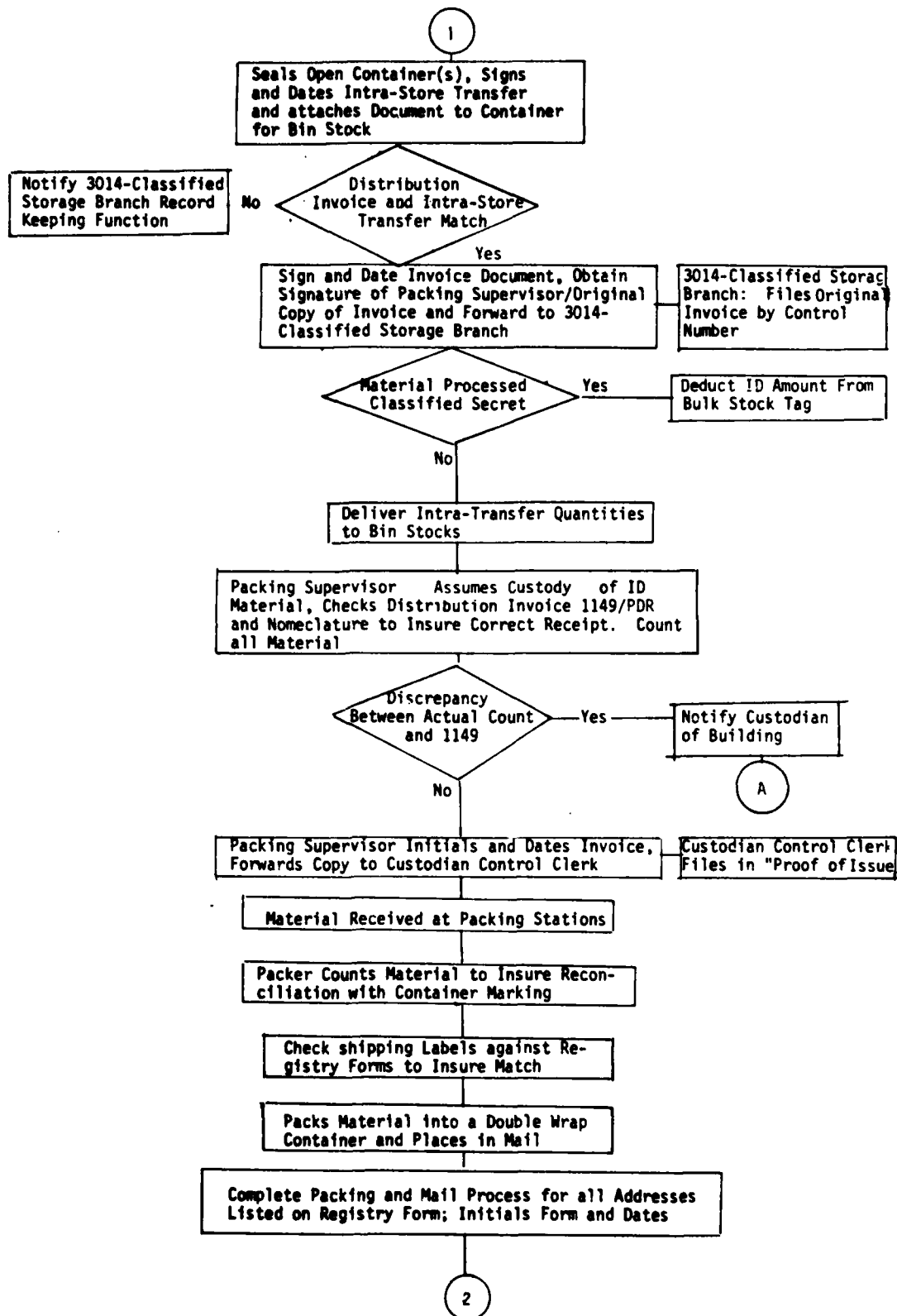
Subprocess C - Receipt and Document Processing (3.2-17 Cont'd.)

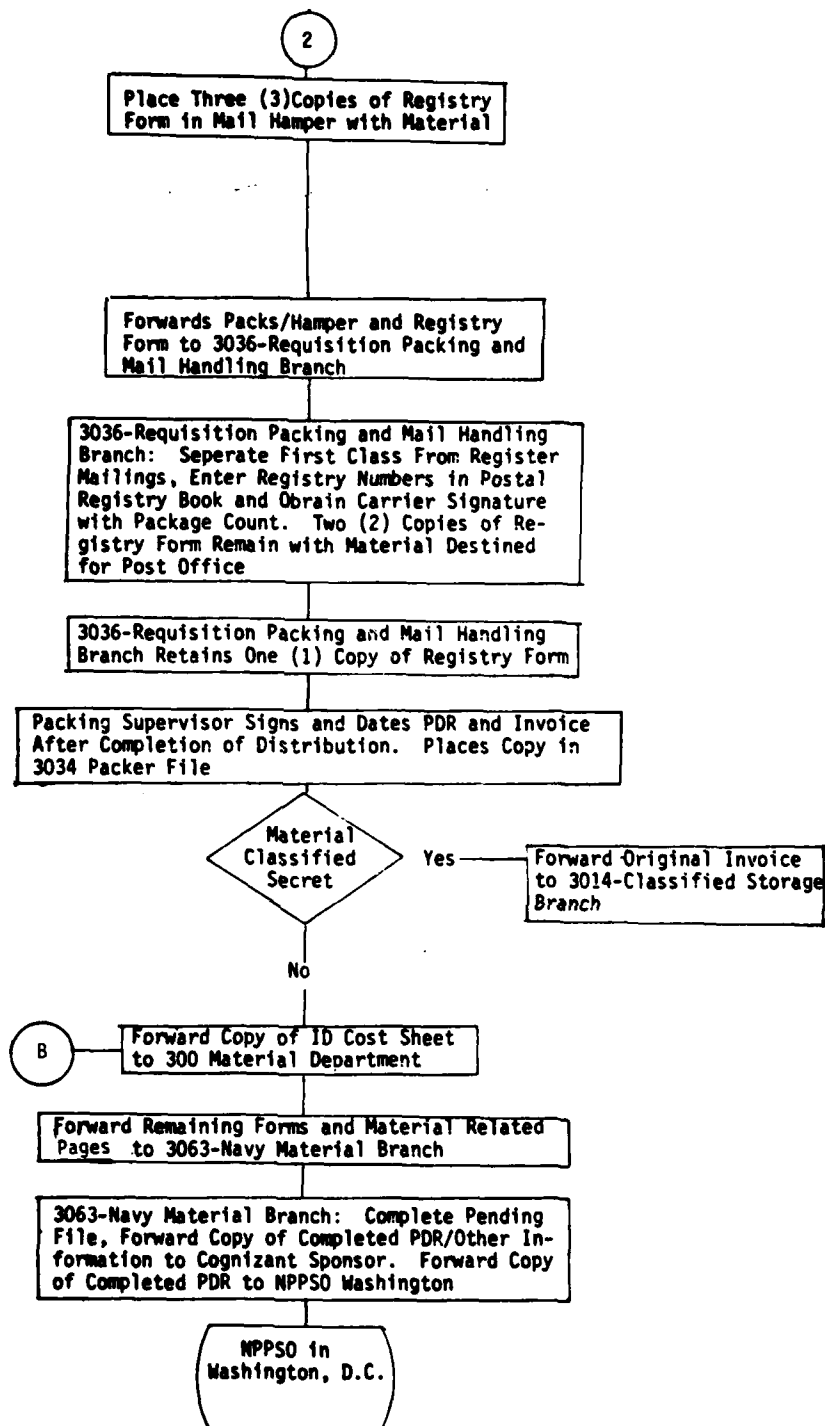


3.2-18 INITIAL DISTRIBUTION OF CLASSIFIED MATERIAL

Initial distribution of classified material is initiated concurrent to the receiving process. 3063-Navy Material Branch of the NPFC Freight Terminal Division assumes primary operational responsibility for I.D. (Initial Distribution activity (ID)).

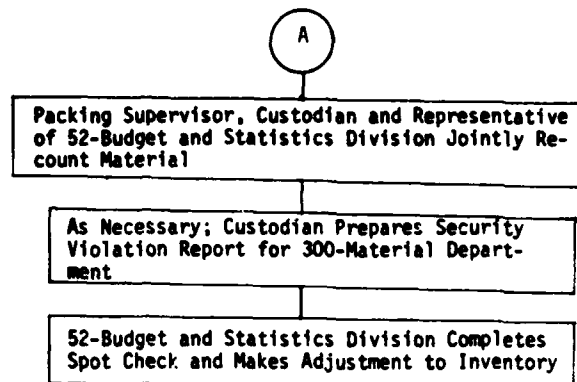






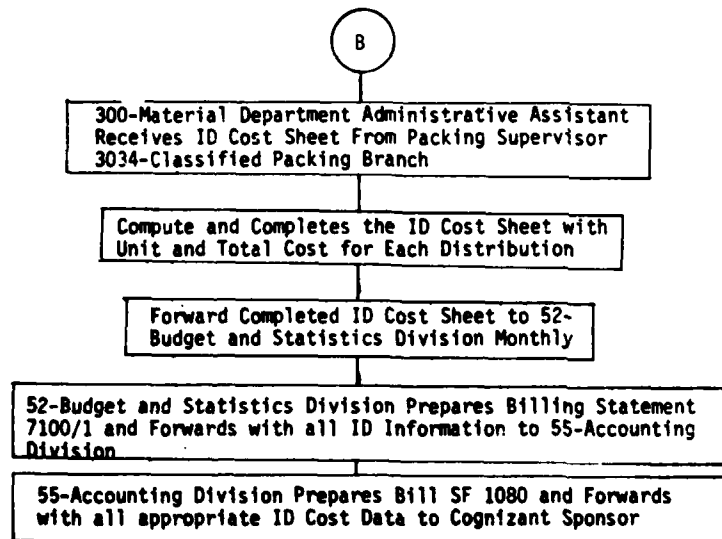
3.2-18 INITIAL DISTRIBUTION OF CLASSIFIED MATERIAL (Cont'd.)

Subprocess A - Preparation of a Security Violation Report

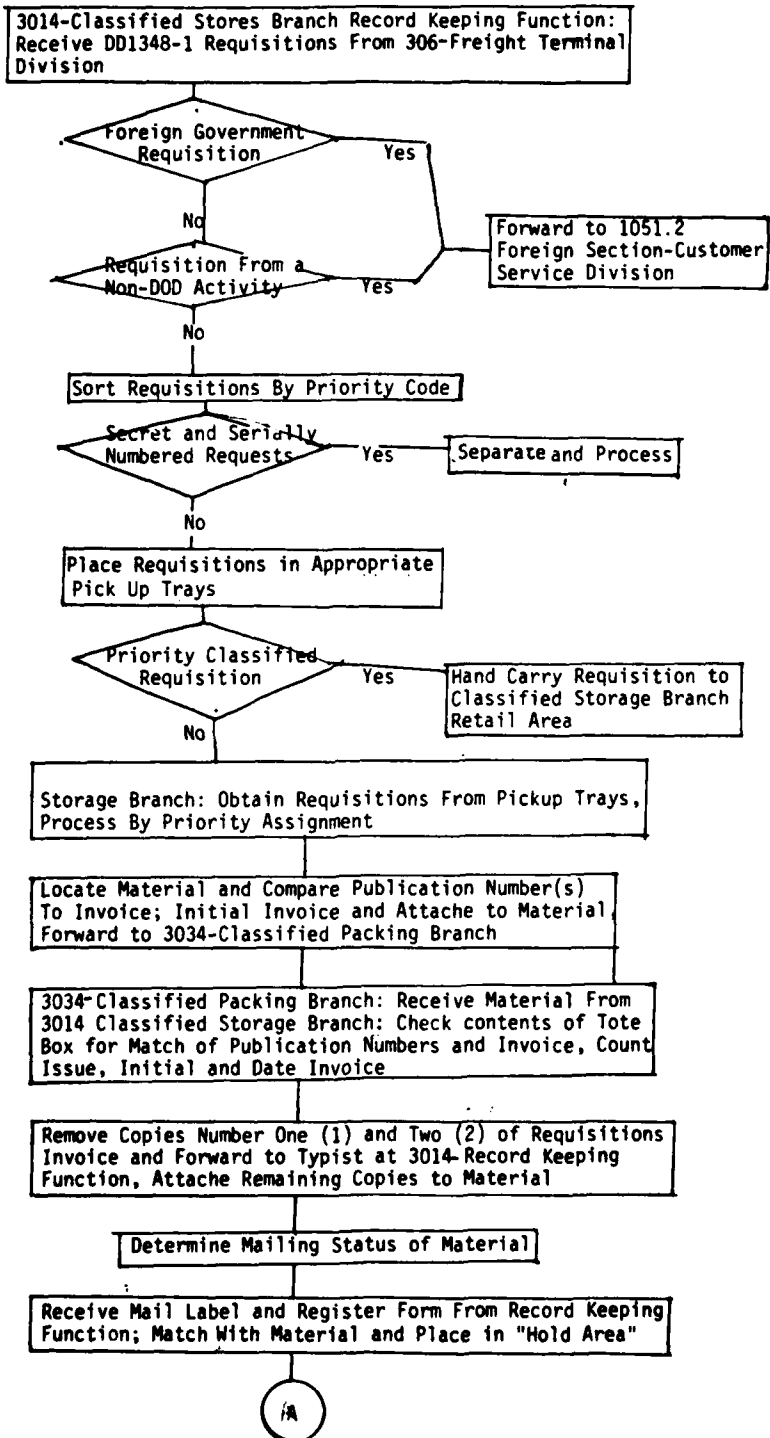


Subprocess B - Closing and Recording ID

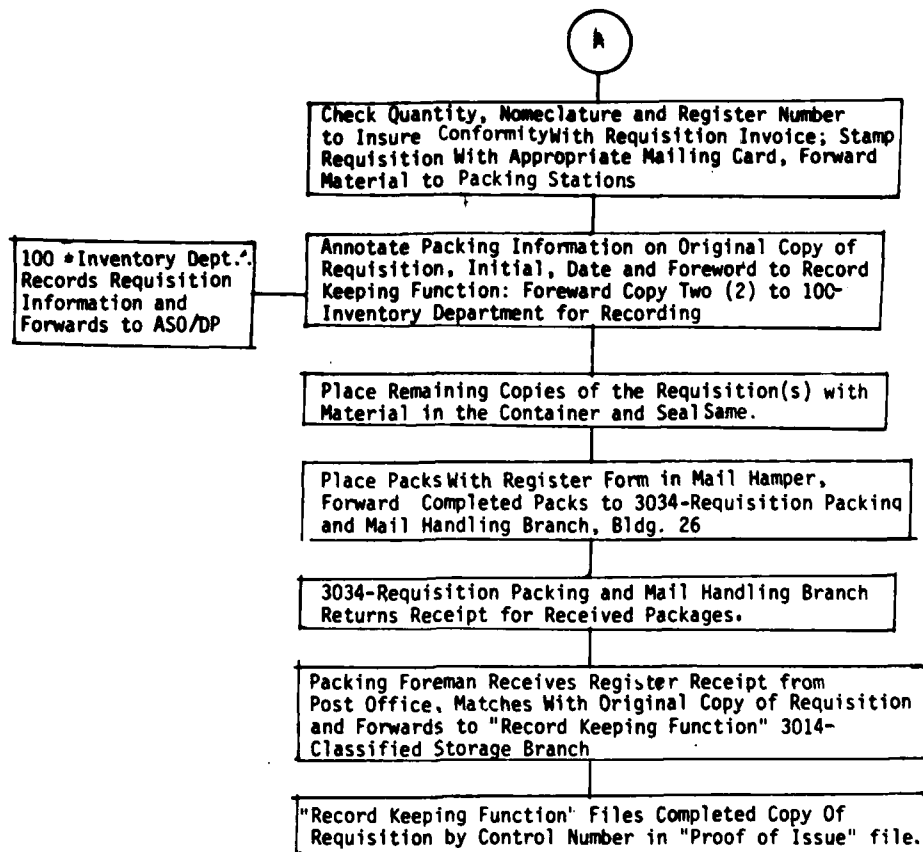
Subprocess B is a Closing and Recording Procedure Conducted by 300-Material Department Staff



3.2-19 ISSUE OF CLASSIFIED MATERIAL

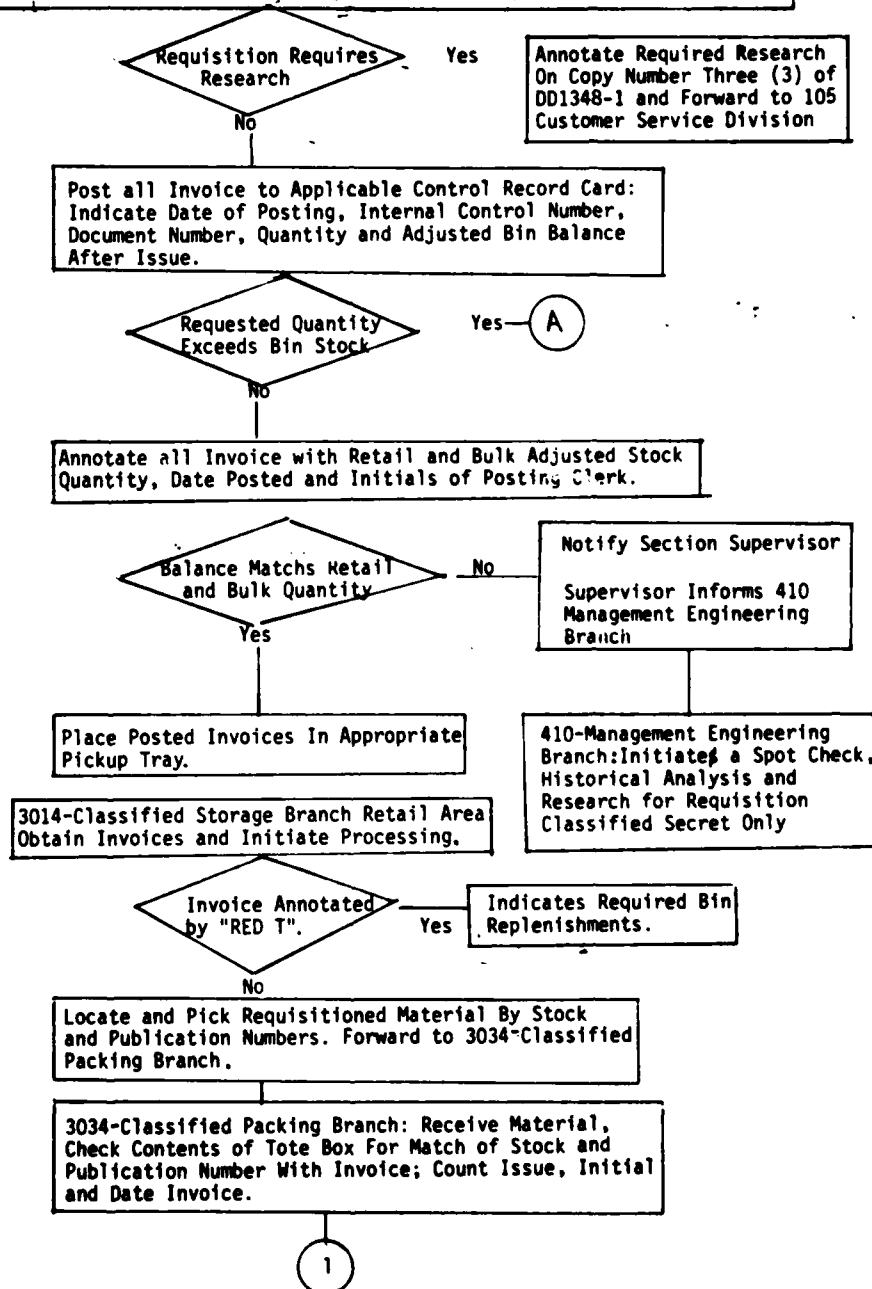


3.2-19 ISSUE OF CLASSIFIED MATERIAL (Cont'd.)

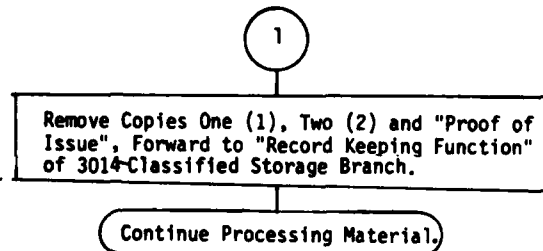


3.2-20 ISSUE OF SECRET MATERIAL FROM BIN STOCKS

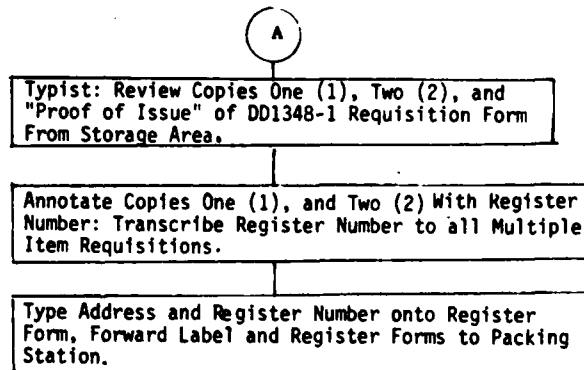
3014-Classified Storage Branch "Record Keeping Function": Remove Number Three (3) Copy of all Secret Requisitions and File in the Daily Control File by Control Number.



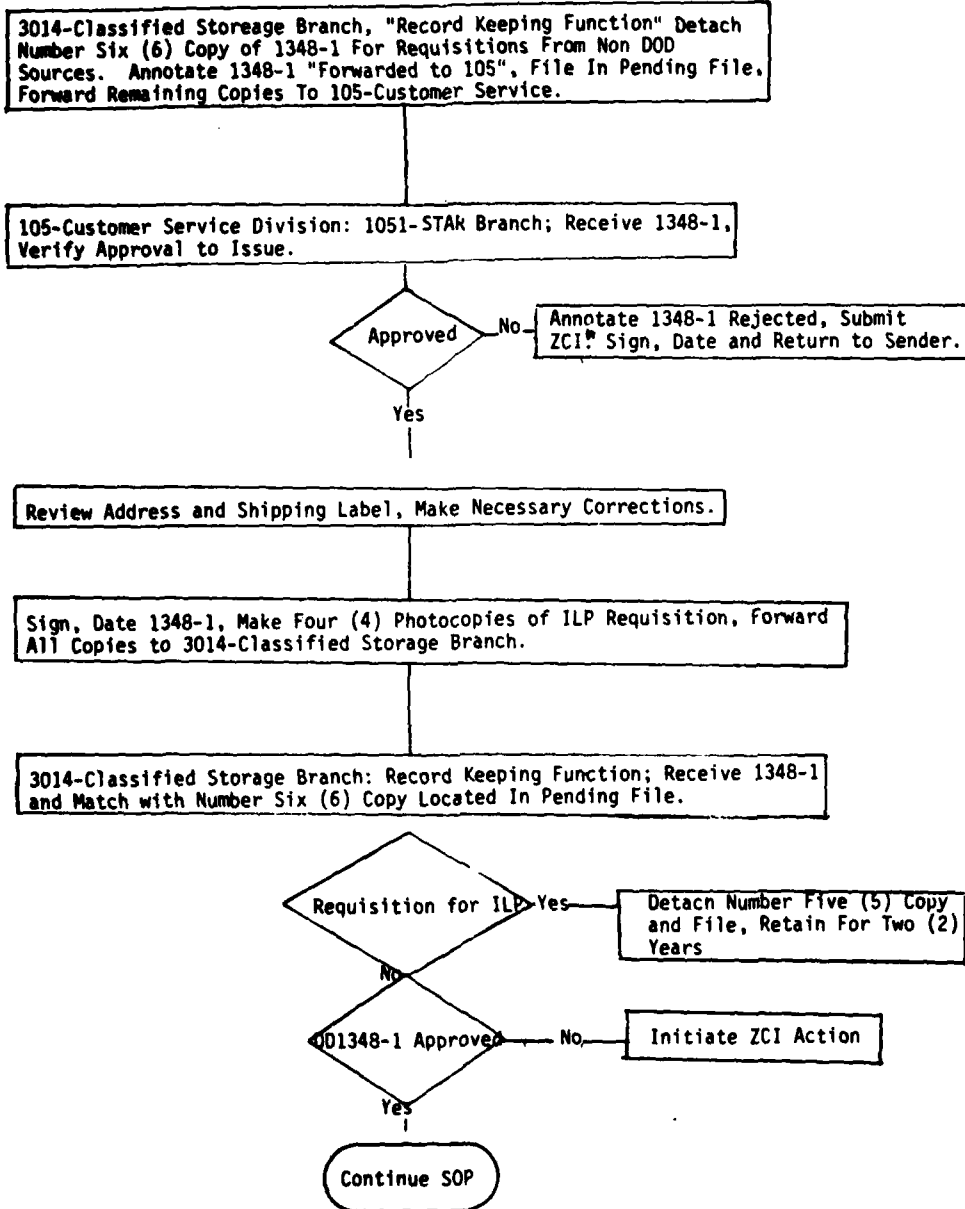
3.2-20 ISSUE OF SECRET MATERIAL FROM BIN STOCKS (Cont'd.)



3.2-20 ISSUE OF SECRET MATERIAL FROM BIN STOCKS SUBPROCESS A



3.2-21 CERTIFICATION OF ISSUE OF CLASSIFIED MATERIAL TO NON-DOD ACTIVITIES



* NPFCINST 4400.1A CH-24: ZCI Refers to a Cancellation Action.

3.2-22 BIN REPLENISHMENT OF SECRET MATERIAL AND SERIALLY NUMBERED FORMS

Bin Replenishment is Initiated When Requisitions Exceed Bin Capacity or Bin Stock Has Been Reduced to Two (2) Copies of the Document

3014-Classified Storage Branch Initiates a-Bin Replenishment: Prepares Intra-Store Transfer of Classified Material, Document 5511/5 in Duplicate; Record Control Number, Stock Number-Publication Number, Transfer Quantity Adjusted Bulk and Retail Stores Balance, Bulk Locations and Initials of Supply Clerk.

Update the Control Record Card with Date of Transfer, Document Control Number, Transfer Quantity and Balance of Stock at Retail and Bulk Locations.

Annotate Transfer Document With a "Red T" To Initiate Transfer.

Bulk Warehousemen 3014-Classified Stores Branch: Receives Transfer Document.

Removes Sealed Container(s) From Bulk Location to Fill Transfer Quantity.

Counts the Bulk Balance to Insure Match With Adjusted Balance After Posting On Transfer Document. Dates And Adjusts Balance On Stock Tag.

Annotate Bulk Balance, Date of Action and Warehouseman's Initials to Transfer Document.

Deliver Material With Attached Transfer Document to the Receiving Transfer Area.

Warehouseman Removes Attached Transfer Document and Opens the Sealed Containers.

Open Material, Check Nomenclature and Contents, Determine Accuracy and Carton Markings and Transfer Document Information..

Place Material into Uniform Quantities, Forward to Bin Issue Area 3014 Classified Branch,

Retail Warehouseman: Recieve Bin Replenishment, Count Total Retail Bin Stock After Transfer For Agreement With Transfer Document.

Place Material In Appropriate Bins.

A

3.2-22 BIN REPLENISHMENT OF SECRET MATERIAL AND SERIALY NUMBERED FORMS

A

Annotate Current Retail Quantity, Date of Action and Initials to Transfer Document, Forward Transfer Document to Record Keeping 3014-Classified Stores Branch.

Record Keeping: Match the Returned Copy of the Transfer Document With Pending Copy; Discard Pending Copy. File Return Copy By Document Control Number.

3.2-23 BIN REPLENISHMENT OF CONFIDENTIAL AND "Y" CODED MATERIAL*

3014-Classified Stores Branch: Bin Warehouseman
Notes On Bin Replenishment Request, Copy #5 DD1384-1
Quantity Necessary to Replenish Bins.

Warehouse Leader Hand Carries, Twice Daily, All
Replenishment Requests to Office Function of
3014-Classified Stores Branch, For a Bulk Location.

Office Function: Receive Replenishment Requests,
Note Bulk Location and Places Request in Pick Up
Tray.

Bulk Warehousemen: Picks Up Replenishment Requests
From Office Function.

Locates Bulk Storage, Removes Requested Quantity
From Bulk Cartons and Places In a Tote Box; Tote
Box Forwarded to Bin Warehouseman via AMHS.

3014-Classified Stores Branch: Bin Warehouseman Notes
on Bin Replenishment Request, Copy #5DD-1384-1 Quantity
Necessary to Replenish Bins

Warehouse Leader Hand Carries, Twice Daily, All
Replenishment Requests to Office Function of 3014-
Classified Stores Branch, for a Bulk Location

Office Function: Receive Replenishment Requests, Note
Bulk Location and Places Request in Pick Up Tray

Bulk Warehousemen: Picks Up Replenishment Request
from Office Function

Locates Bulk Storage, Removes Requested Quantity
From Bulk Cartons and Places in a Tote Box; Tote
Box Forwarded to Bin Warehouseman via AMHS

* NPFCINST 4400.1A 2/1/77

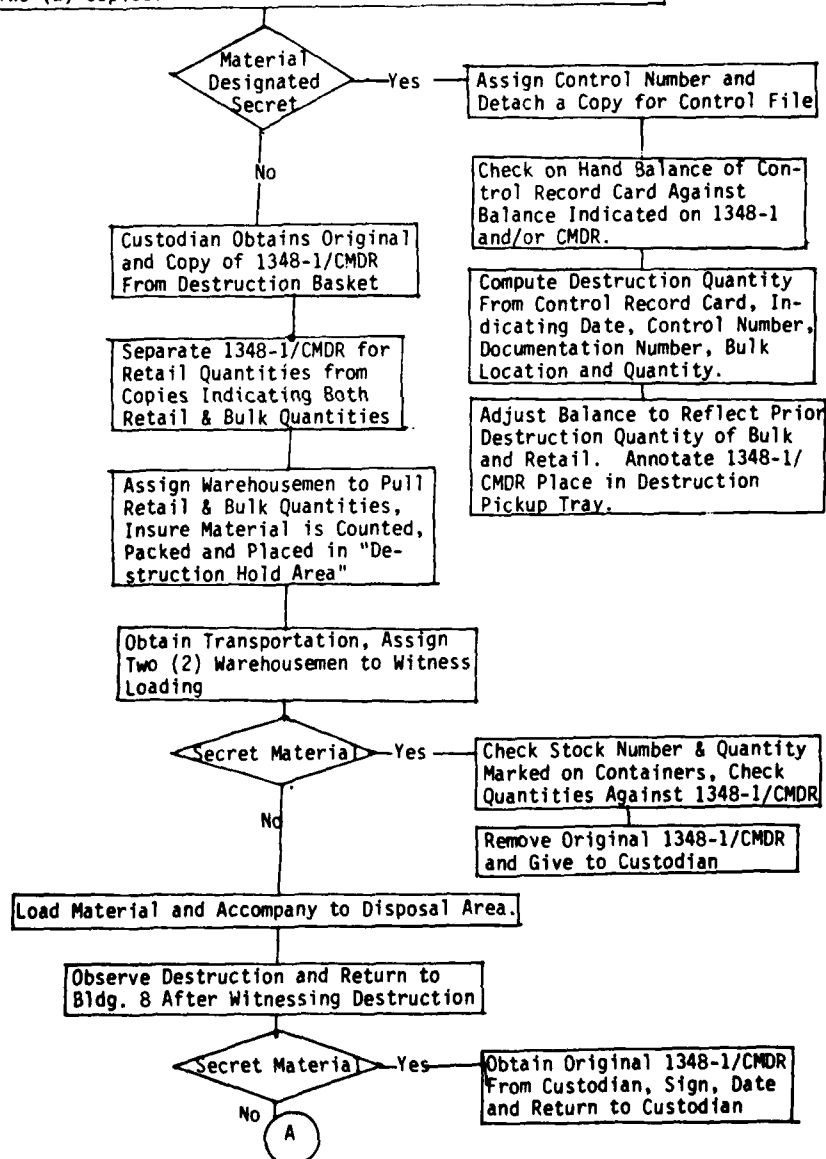
3.2-24 DESTRUCTION OF CLASSIFIED MATERIAL

Publications Division 101 Inventory Department: Prepare A Classified Material Destruction Record (CMDR) OPNAV 5511/12 In Quadruplicate When Notified of Material Status Change.

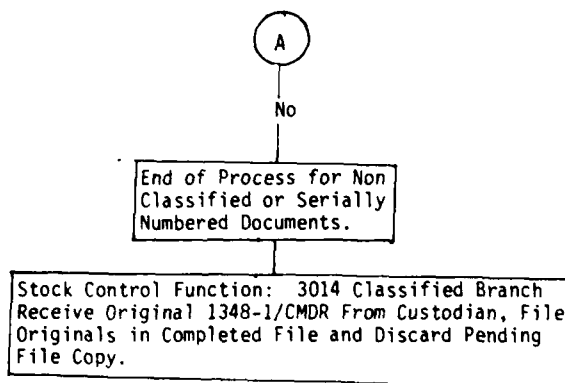
Forward Original and Two (2) Copies of CMDR to 3014-Classified Storage Branch. Retain One (1) Copy of CMDR for One Year or Until Inventory is Completed.

Input a Change Notice Transmittal to Computer, Creating a 1348-1 Document Identifier.

3014-Classified Storage Branch: Receive 1348-1 Documentation Identifier with Requisition Information; Receive CMDR Original, and Two (2) Copies.



3.2-24 DESTRUCTION OF CLASSIFIED MATERIAL (Cont'd.)



4.0 DATA COLLECTION, SUMMARIZATION AND ANALYSIS*

This section describes in detail specific efforts made for data collection in each of the major analyses areas identified earlier and summarizes the results therefrom. Specific topics covered in each analysis area include the following:

- Introduction
- Objectives of Analysis
- Data Collection Methodology
- Data Summarization and Analysis

Major analysis areas covered in this section include :

1. Comprehensive Analysis of Orders
2. Analysis of Procurement History Records
3. Morphological** Analysis of Documents
4. Requisition Receipts Analysis
5. Survey of NPFC Customers
6. Analysis of Physical Tracking of Requisition Processing
7. Estimation of Current Demand by Customer and Document Categories

Each of the above are discussed in detail in the following pages of this section.

*The analysis is related to the Warehouse Controlled Documents only.

**Refers to the physical characteristics of the documents, including their contents.

4.1 COMPREHENSIVE ANALYSIS OF ORDERS^{*}

4.1.1 Introduction

As previously mentioned, one of the major functions of NPFC is to process incoming orders requesting warehouse controlled documents. On the average, approximately 1279 orders are processed each day for warehouse controlled documents. The basic means used for ordering documents are listed below:

- DD-1348
- DD-1205
- DD-1425
- Letters
- Telegram Messages
- Telephone Calls (DD-1306)
- Personal Pick-ups

The orders provide specific information on the following items:

- Customer Name and Address
- Identification of Specific Documents (line items) Ordered
- Quantity Requested Per Line Item
- Identification of Warehouse Stations Handling Each Requested Line Item.

4.1.2 Objectives of Order Analysis

The incoming orders were used as a major source of information for the following purposes:

- To identify and categorize NPFC customers.
- To estimate the average number of line items per order and average quantity per line item and order.

^{*}Warehouse Controlled Documents only

- To identify basic statistical relationships between document categories and customer categories.
- To estimate the percent of orders handled by various warehouse stations within NPFC.

4.1.3 Data Collection Methodology

Customer orders (requisitions) comprising the sample were selected from daily receipts at 3015-Programming Branch. Requisitions were selected at random from station assignment batches and were reviewed at different times of the day throughout the survey in order to assure a representative sample. Prior to data collection, branch operations were reviewed through interviews with the NPFC staff. A detailed review of procedures facilitated implementation of the data collection effort and minimized disruption of routine workflow.

The overall methodology used for collecting the necessary data involved the following major steps:

1. A sample of 1009 mail orders was selected randomly from the incoming orders at the 3015-Programming Branch. These orders were selected over a 15 day period to minimize the adverse effects of potential sampling biases and distortions.

Since about 30 percent of the orders are received by telephone and it is likely that phone orders may have different characteristics than the mail orders, it was decided to analyze phone orders separately. A total of 142 phone orders were selected.

2. The specific information identified below was extracted from each of the orders:

- Customer Category

- Source of Document or Document Sponsor (for each Document Ordered)
- Order Format/Medium Used
- Urgency of Order
- Document Categories Ordered
- Number of Line Items Ordered by Document Category
- Total Order Quantity by Document Category
- Warehouse Location/Station of each Document Ordered.

3. The data extracted from the orders were summarized separately for mail orders (includes orders utilizing DD-1348, DD-1205, DD-1425, letters and messages) and telephone orders (DD-1306). The summary results are presented in the following section.

As noted, the data collection method was designed to avoid disruption of regular operations, and was successful in selecting orders in a random manner.

4.1.4 Summarization and Analysis of Order Data

Significant information extracted from the mail and phone orders is summarized in the following tables:

Table 4.1-1 Distribution of Mail Orders by Customer Category

Table 4.1-2 Distribution of Mail Orders by Document Category

Table 4.1-3 Distribution of Mail Orders by Customer and Document Categories

Table 4.1-4 Distribution of Phone Orders by Customer Category

Table 4.1-5 Distribution of Phone Orders by Document Category

Table 4.1-6 Distribution of Phone Orders by Customer and Document Categories

The information summarized in the Tables is largely self-explanatory; however, some highlights are noted in the following paragraphs.

Table 4.1-1

Of all the orders placed by Corporations, 40% of the requested line items were Military Specifications followed by 36% for Military Standards. Approximately 49% of the line items requested by Navy were for Military Standards followed by 18% for Military Specifications and 17% for Navy Instructions. Average number of different document categories requested per order amounted to 1.5. Approximately 4.7% of the mail orders sampled requested one Line item, as opposed to 95.3% requesting more than one Line items.

Average number of line items and quantities per order for all document categories combined amounted to 5.5 and 13.9, respectively. Average quantity per line item ordered amounted to 2.5.

Almost 80% of the orders received by NPFC came from Corporations/Private Organizations followed by 8.4% from the Navy and 4.6% from the Army.

Table 4.1-2

As can be seen from the table, Military Specifications (38%) and Military Standards (37%) were the most frequently ordered items accounting for bulk of the requested documents.

TABLE 4.1-1 DISTRIBUTION OF MAIL ORDERS BY CUSTOMER CATEGORY

TABLE 4.1-1 DISTRIBUTION OF MAIL ORDERS BY CUSTOMER CATEGORY																				
CUSTOMER CATEGORY	Distribution of Orders by Line Item and Quantity							Order Distr. by Qty. of L/I	Distribution of Orders by Document Category											
	Percent* Total Of Orders	Total L/I	Avg. No. Of L/I	Avg. Qty Per Order	Total Qty Ordered	Avg. Qty Per Order	L/I		Mil. Spec.	Mil. Std.	DOD Dirac.	NAVINST Hbk	QPL	Fed Spec.	Ind. Std.	No. Of Cat. Per Order				
Navy	85	8.4	424	5.0	893	10.5	2.1	4.8	95.2	18.	49.	6.	2.	17.	3.	2.	0.	3.	0.	1.25
Army	47	4.6	363	7.7	664	14.1	1.8	8.6	91.4	33.	38.	15.	0.	0.	5.	7.	0.	0.	2.	1.23
Air Force	5	.4	22	4.4	46	9.2	2.0	20.0	80.0	40.	20.	0.	0.	0.	0.	20	0.	20	0.	1.7
Associated DOD Agencies	27	3.0	104	3.8	306	11.3	2.9	7.5	92.5	30.	48.	6.	2.	0.	6.	3.	0.	2.	3.	1.13
Assorted Gov't Agencies; Federal and State	4	.3	11	2.8	53	13.2	4.8	0.	100.0	50.	25.	0.	0.	0.	0.	0.	25.	0.	0.	3.31
Corporations Private Organizations	808	80.0	4520	5.6	11,571	14.32	2.5	5.2	94.8	40.	36.	2.	1.	.04	2.	11.	3.	4.	.05	1.20
Assorted Non-Gov't Organizations	8	.7	34	4.3	156	19.5	4.5	0.	100.	44.	22.	11.	11.	0.	0.	0.	0.	11.	0.	2.0
Foreign Private Organizations	14	1.3	96	6.9	239	17.0	2.4	0.	100	38.	44.	0.	0.	0.	6.	6.	0.	6.	0.	1.0
Foreign Military Organizations	11	1.0	44	4.0	142	12.9	3.2	0	100	39.	46.	0.	0.	0.	15.	0.	0.	0.	0.	1.0
TOTALS	1009	100.	5618	5.5	14070	13.9	2.5	4.7	95.3	38.	37.	3.	1.	2.	2.	9.	4.	3.	.06	1.5

^a Throughout this report, percent figures are rounded

TABLE 4.1-2 DISTRIBUTION OF MAIL ORDERS BY DOCUMENT CATEGORY

TABLE 4.1-2 DISTRIBUTION OF MAIL ORDERS BY DOCUMENT CATEGORY														
DOCUMENT CATEGORY	Distribution of Orders by Line Item and Quantity					Distribution of Orders by Customer Category								
	Percent Total Of Orders	Total L/I Ordered	Avg. No. L/I Per Order	Avg. Qty. Per Order	Avg. Qty. Per Order L/I	Navy	Army	Air Force	Assoc. DOD	Assoc. Govt Org.	Corp. Private Org.	Assort Non-Govt Org.	Foreign Private Org.	Foreign Mil. Org.
Military Specifications	461 38.	2283	4.9	5,239	11.3 2.2	4.3	4.3	.04	2.3	.04	84.8	.08	1.3	1.0
Military Standards	459 37.	1980	4.3	5,845	12.7 2.9	11.5	5.0	.02	3.7	.02	76.0	.04	1.5	1.3
Data Item Descriptions	40 3.	149	3.7	327	8.1 2.1	17.5	22.5	0.	5.0	0.	52.5	2.0	0.	0.
DOD Directives	16 1.	167	10.4	208	13.0 1.2	12.5	0.	0.	6.2	0.	75.0	6.0	0.	0.
Naval Instructions	23 2.	98	4.2	138	6.0 1.4	82.6	0.	0.	0.	0.	17.3	0.	0.	0.
Handbooks	29 2.	78	2.6	283	9.7 3.6	10.3	10.3	0.	6.8	0.	62.0	0.	3.4	6.8
Qualified Products Lists	114 9.	536	4.7	1225	10.7 2.2	1.7	3.5	.08	.08	0.	92.1	0.	.08	0.
Federal Specifications	31 3.	190	6.1	391	12.6 2.0	0.	0.	0.	0.	7.7	92.3	0.	0.	0.
Federal Standards	49 4.	122	2.4	343	7.0 2.8	6.1	0.	2.0	2.0	0.	85.7	2.0	2.0	0.
Industry Standardization Documents	7 1.	15	2.1	71	10.1 4.7	0.	14.2	0.	14.2	0.	71.4	0.	0.	0.
TOTALS	1229	5618		14070	2.5									

It should also be noted that Corporations/Private Organizations accounted for vast majority of orders for all document categories except for the Naval Instructions (17.3%).

Table 4.1-3

This table provides a more detailed breakdown of orders, for each customer category, by specifying average number of line items, order quantity and quantity per line item ordered for each major document category.

Table 4.1-4

It should be obvious from this table that, for phone orders, a vast majority of these orders (83%) were placed by corporations followed far behind by the Navy (4.9%). It should also be noted that average number of line items and average quantity per order were 1.9 and 3.6 for phone orders as compared to 5.5 and 13.9 for the mail orders, respectively. Also, more than half the of the phone orders (52.8%) were for a single line item as opposed to 4.7% for mail orders.

Table 4.1.5

About 58% of the incoming phone orders to NPFC requested Military Standards followed by 19.4% requesting Military Specifications. The average quantity per line item was 1.9 for phone orders as compared to 2.5 for mail orders.

Table 4.1-6

This table provides a further breakdown of phone orders by customer category and document category.

In addition to the summary data presented above, 76 daily tally records maintained by 3015-Programming Branch were collected and used to estimate

TABLE 4.1-3 DISTRIBUTION OF MAIL ORDERS BY CUSTOMER AND DOCUMENT CATEGORIES

TABLE 4.1-3 DISTRIBUTION OF MAIL ORDERS BY CUSTOMER AND DOCUMENT CATEGORIES																	
CUSTOMER CATEGORY	Distribution Of Orders				Order Distribution by Document Category (Average)												
					Mil. Spec.		Mil. Std		DID		DOD Dir.						
	Total Orders	Total L/I Ordered	Total Qty. Ordered	Avg. No. L/I Per Order	Avg. Qty. Per Order	No. L/I	Qty. L/I	No. L/I	Qty. L/I	No. L/I	Qty. L/I	No. L/I	Qty. L/I				
Navy	85	424	893	5.0	10.5	4.6	19.	4.1	4.6	8.	1.7	5.8	9.2	1.5	6.5	6.5	6.5
Army	47	363	664	7.7	14.1	7.3	10.6	1.4	4.1	10.8	2.5	0.	0.	0.	0.	0.	0.
Air Force	5	22	46	4.4	9.2	6.5	18.5	2.8	4.	4.	1.	0.	0.	0.	0.	0.	0.
Associated DOD Agencies	27	104	306	3.8	11.3	3.8	16.1	4.1	3.4	5.7	1.6	2.	4.	2.	1.	3.0	3.0
Assorted Govt Agencies; Federal and State	4	11	53	2.8	13.2	2.	6.0	3.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
Corporations, Private Organizations	808	4520	11,571	5.6	14.3	4.9	11.1	2.2	4.2	13.4	3.1	5.7	7.3	1.2	2.7	13.5	4.9
Assorted Non-Govt Organizations	8	34	156	4.3	19.5	5.	204	4.0	1.5	60	4.0	0.	0.	0.	2.	15.	7.5
Foreign Private Organizations	14	96	239	6.9	17.0	4.4	3.2	.4	2.8	20.8	5.4	0.	0.	0.	0.	0.	0.
Foreign Military Organizations	11	44	142	4.0	12.9	4.4	18.8	4.2	3.8	6.0	2.1	0.	0.	0.	0.	0.	0.
Totals	1009	5618	14070	5.5	13.9	5.0	11.56	2.9	4.2	12.4	2.9	5.512.1	1.9		6.9	8.6	1.2

TABLE 4.1-3 DISTRIBUTION OF MAIL ORDERS BY CUSTOMER AND DOCUMENT CATEGORIES (Con'd)

TABLE 4.1-3 DISTRIBUTION OF MAIL ORDERS BY CUSTOMER AND DOCUMENT CATEGORIES (Con'd)																
CUSTOMER CATEGORY	Order Distribution by Document Category (Average)															
	NAVINST.		HBK.		QPL.		FED. SPEC.		FED. STD.		IND. STD. DOC.					
	No. L/I	Qty. L/I	No. L/I	Qty. L/I	No. L/I	Qty. L/I	No. L/I	Qty. L/I	No. L/I	Qty. L/I	No. L/I	Qty. L/I				
Navy	3.5	4.7	1.3	.7	2.6	6.6	2.5	0.	0.	0.	1.2	1.5	1.2	0.	0.	0.
Army	0.	0.	0.	0.	4.	2.0	.7	0.	0.	0.	0.	0.	0.	1.	2.0	2.0
Air Force	0.	0.	0.	0.	4.	4.	4.	0.	0.	0.	1.	1.	1.	0.	0.	0.
Associated DOU Agencies	0.	0.	0.	17.0	1.3	1.6	1.2	0.	0.	0.	0.	0.	0.	0.	0.	0.
Assorted Govt Agencies; Federal and State	0.	0.	0.	0.	0.	0.	0.	2.	30.	15.	5.	10.	2.	0.	0.	0.
Corporations Private Organizations	3.1	4.7	1.5	1.5	4.2	9.8	2.3	6.0	11.6	1.9	3.4	10.	2.9	2.3*	11.3	4.9
Assorted Non-Govt Organizations	0.	0.	0.	0.	0.	0.	0.	2.	2.	2.	0.	0.	0.	0.	0.	0.
Foreign Private Organizations	0.	0.	0.	4.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Foreign Military Organizations	0.	0.	0.	2.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTALS	3.3	4.7	1.4	3.6	4.0	9.3	2.2	5.7	11.8	2.0	3.1	8.7	2.8	2.1	10.1	4.7

*Ordered but not issued.

TABLE 4.1-4 DISTRIBUTION OF PHONE ORDERS BY CUSTOMER CATEGORY

TABLE 4.1-4 DISTRIBUTION OF PHONE ORDERS BY CUSTOMER CATEGORY																			
CUSTOMER CATEGORY	Distribution of Orders by Line Item and Quantity							Order Distr. by No. of L/I	Distribution of Orders by Document Category										
	Percent Of Total Order	Total L/I	Total Per Order	Avg. No. L/I	Avg. Qty. Per Order	Avg. Qty. Per Order	Sgl. Multiple L/I		Mil. Spec.	Mil. Std.	DOD Direct	NAVINST Hbk QPL	Fed Spec.	Fed Std.	Indu. Std.	No. Of Cat. Per Order			
Navy	7	4.9	10	1.4	119	17.0	1.4	71.	29.	12.5	0.	0.	37.5	0.	25.0	0.	0.	12.5	1.1
Army	5	3.5	12	2.4	15	3.0	1.2	20.	80.	16.6	33.3	0.	33.3	0.	0.	0.	0.	16.6	1.2
Air Force	0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Associated DOD Agencies	6	4.2	14	2.3	24	4.0	1.7	33.	66.	14.2	42.8	28.5	14.2	0.	0.	0.	0.	0.	1.1
Assorted Gov't Agencies; Federal and State	2	1.4	10	5.0	15	7.5	1.5	0	100	0.	100.0	0.	0.	0.	0.	0.	0.	0.	1.0
Corporations Private Organizations	118	83.0	220	1.9	344	2.9	1.6	54.	46.	21.6	63.2	2.4	1.6	1.6	1.6	3.2	0.	2.4	1.0
Assorted Non-Government Organizations	4	2.8	5	1.2	5	1.2	1.0	75.	25.	0.	0.	50.0	0.	0.	25.0	0.	25.0	0.	1.0
TOTALS	142	100	271	1.9	522	3.6	1.9	52.8	47.1										

*Ordered but not issued

TABLE 4.1-5 DISTRIBUTION OF PHONE ORDERS BY DOCUMENT CATEGORY													
DOCUMENT CATEGORY	Distribution of Orders by Line Item				Distribution of Orders by Customer Category								
	Percent Of Orders	Total L/I Ordered	Avg. No.		Navy	Army	Air Force	Assort. Govt Org.	Assort. Private Org.	Corp./ Private Org.	Assort. Non-Govt Org.	Foreign Military Org.	
			Total L/I	Per Order									
Military Specifications	30	19.4	52	1.7	69	2.3	1.3	3.3	3.3	0.	90.0	0.	0.
Military Standards	89	57.7	174	1.9	288	3.2	1.6	1.1	2.2	0.	91.0	0.	0.
Data Item Descriptions	5	3.2	7	1.4	8	1.6	1.1	0.	0.	40.0	0.	0.	0.
DOD Directives	7	4.5	12	1.7	18	2.5	1.5	0.	28.5	0.	14.2	0.	28.5
Naval Instructions	5	3.2	7	1.4	115	23.0	3.2	60.0	0.	0.	0.	0.	0.
Handbooks	2	1.2	2	1.0	3	1.5	1.5	0.	0.	0.	100.0	0.	0.
Qualified Products Lists	7	4.5	7	1.0	8	1.1	1.1	28.5	0.	0.	57.1	14.2	0.
Federal Specifications	0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Federal Standards	5	3.2	7	1.4	8	1.6	1.1	0.	20.0	0.	0.	60.0	20.0
Industry Standardization Documents	4	2.5	3	.7	5	1.2	1.6	25.0	0.	0.	75.0**	0.	0.
TOTAL	154	100	271	-	522	3.6	1.9						

*Some orders requested more than one document category.
 **Ordered but not issued.

TABLE 4.1-6 DISTRIBUTION OF PHONE ORDERS BY CUSTOMER AND DOCUMENT CATEGORY

TABLE 4.1-6 DISTRIBUTION OF PHONE ORDERS BY CUSTOMER AND DOCUMENT CATEGORY															
CUSTOMER CATEGORY	Distribution of Order				Distribution of Order by Document Category (Average)										
	Total Orders	Total L/I	Total Qty. Ordered	Avg. No. L/I per Order	No. per Order	Mil. Spec.		Mil. Std.		DIO	DOD Direc.				
						No. of L/I	Qty. per L/I	No. of L/I	Qty. per L/I		No. of L/I	Qty. per L/I			
NAVY	7	10	119	1.4	17.0	2	2	1	1	1	1	0	0	0	0
ARMY	5	12	15	2.4	3.0	1	2	1	2.5	2.5	1	0	0	1.5	1.5
AIR FORCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ASSOCIATED DOD AGENCIES	6	14	24	2.3	3.6	1	1	1	3	6.3	2.1	1	1	2	1
ASSORTED GOVT. AGENCIES: FEDERAL AND STATE	2	10	15	5.0	7.5	0	0	0	5	7.5	1.5	0	0	0	0
CORPORATIONS PRIVATE ORGANIZATIONS	118	275	344	2.3	3.3	1.7	2.3	1.3	1.8	3.0	1.6	1.6	2	2.5	1.8
ASSORTED NON-GOVT. ORGANIZATIONS	4	5	5	1.2	1.2	0	0	0	0	0	0	0	0	0	0
TOTAL	142	326	522	2.2	3.6	1.7	2.3	1.3	1.9	3.2	1.6	1.4	1.6	1.7	1.5

TABLE 4.1-6 DISTRIBUTION OF PHONE ORDERS BY CUSTOMER AND DOCUMENT CATEGORY (Continued)

CUSTOMER CATEGORY	Order by Distribution by Document Category (Average)													
	NAVINST.		HRK.		QPL.		FED. SPEC.		FED. STD.		IND. STD. DOC.			
	No. L/I	Qty. L/I	No. L/I	Qty. L/I	No. L/I	Qty. L/I	No. L/I	Qty. L/I	No. L/I	Qty. L/I	No. L/I	Qty. L/I		
Navy	1.3	37.3	0	0	1.	1.	0	0	0	0	1	2	2	
Army	0	0	0	0	0	0	0	0	3	3	0	0	0	
Air Force	0	0	0	0	0	0	0	0	0	0	0	0	0	
Associated DOD Agencies	0	0	0	0	0	0	0	0	0	0	0	0	0	
Assorted Govt Agencies; Federal and State	0	0	0	0	0	0	0	0	0	0	0	0	0	
Corporations Private Organizations	1.5	1.5	1	1.	1.5	1.	1.	1.	0	0	1.5*	1.5	1.0	
Assorted Non-Govt Organizations	0	0	0	0	0	1	2	2	1	1	1	0	0	
TOTALS	1.4	23.0	16.0	1.0	1.5	1.0	1.1	1.1	0	0	0	1.3	1.6	1.2

*Ordered but not issued.

the average routine request workload (percent of L/I handled) at various warehouse stations (see Table 4.1-7). Station No. 1 handled 56.4% of the L/I followed by 28.8% for Station No. 11, 12.3% for Station No. 13 and 2.4% for Station No. 14. The average number of daily line items amounted to 3978. In addition, requests for from 25 line items to a full scale class of items were handled as "Special Projects."

TABLE 4.1-7 DISTRIBUTION OF LINE ITEMS HANDLED BY BIN STATIONS (EXCLUDES "SPECIAL PROJECTS")												
ORDER FREQUENCY			STATION DISTRIBUTION									
			STATION NO. 1		STATION NO. 11		STATION NO. 13		STATION NO. 14			
ORDERS	Total L/I	Percent	Avg. Daily L/I	Vol.	Daily Avg.	Percent	Vol.	Daily Avg.	Percent	Vol.	Daily Avg.	Percent
Multiple L/I Orders	286,053	94.6	3763.8	167906	2209.2	98.3	80567	1060.0	92.4	32,786	431.3	88.3
Single L/I Orders	16,287	5.4	214.2	2739	36.0	1.7	6540	86.0	7.6	4,337	57.0	11.7
Totals	302,340	100	3978.0	170645	2245.3	56.4	87107	1146.1	28.8	37,123	488.4	12.3
										7456	98.1	2.4

Source: Daily Tally Records Maintained by 3015-Programming Branch

4.2 ANALYSIS OF PROCUREMENT HISTORY RECORDS

4.2.1 Introduction

Procurement history records (called Procurement Record Cards) are maintained by NPFC on each of the line items carried. These records are kept manually in about 12 tub files (3' X 5'). Most of these records contain some of the following specific types of information:

- Nomenclature (document identification)
- Document Date
- Number of Pages
- Federal Supply Classification
- Preparing Activity
- Custodian Identification
- Purchase Order Number
- Purchase Request Received at NPFC
- Initial Procurement Quantities and Distribution Data
- Replenishment Actions and Quantities

It should be emphasized that all the record cards do not contain all of the above information. However, most cards did have document identification, document date, initial procurement data and replenishment data.

4.2.2 Objectives of Procurement History Analysis

The data contained in the procurement records were used as a major source of information for the following purposes:

- To estimate the average initial distribution and initial stock level for various document categories.
- To analyze replenishment actions and frequencies by document category and by year.

- To analyze the number and frequency of document revisions and amendments.
- To estimate document age in terms of overall percentage by document category.

4.2.3 Data Collection Methodology

The overall methodology used for collecting the necessary data involved the following major steps:

1. A total of 574 records were sampled from the files. The number of sample records picked up for each document category were based on the estimated relative proportion of the number of line items of that document category to the total number of line items of all document categories carried at the NPFC. For those document categories where the number of items picked up using the relative proportion criteria were few, it was decided to increase the number to assure reasonable statistical representation.
2. From each of the selected records, the following information was extracted:
 - Document Category
 - Document Publication Date
 - Number of Pages (if available)
 - Initial Procurement Quantities
 - Initial Stocking Levels
 - Replenishment Action Dates and Quantities

● Number of Revisions and Amendments

3. The data extracted from the individual records were summarized appropriately to provide an overview of initial procurement and distribution, and replenishment actions in terms of quantities and percentages for individual document categories. Also, pertinent data related to the number and frequency of revisions and amendments was summarized. The results are presented in the following section.

It should be noted that some of the selected records may be for "inactive" line items (i.e., line items no longer carried by NPFC). This would happen if the procurement history records for cancelled line items are not transferred to another file.

4.2.4 Summarization and Analysis of Procurement Data

Significant information extracted from the procurement records is summarized in the following tables:

Table 4.2-1 Initial Distribution and Stock Receiving Activities

Table 4.2-2 Analysis of Replenishment Actions and Frequency

Table 4.2-3 Analysis of Document Revisions

Table 4.2-4 Analysis of Document Amendments

Table 4.2-5 Analysis of Document Age

Explanatory comments and highlights related to initial distribution and replenishment activity are included in the following paragraphs.

Table 4.2-1

Approximately 78.1% of the sampled line items required initial distribution by the NPFC. More than half of the line items under each of

TABLE 4.2-1 INITIAL DISTRIBUTION AND STOCK RECEIVING ACTIVITIES

TABLE 4.2-1 INITIAL DISTRIBUTION AND STOCK RECEIVING ACTIVITIES												
DOCUMENT CATEGORY	No. Of Records With Initial Distr. & Stock Data	No. Of Line Items Initially Received at NPFC	Qty. Initially Received Distr.	Percent Of Initially Received Doc.	Qty. Stocked	Percent Of Received Doc.	Avg. Qty. Received Per L/I	Initial Avg. Qty. Distr. Per L/I	Percent Of Sampled Initially Distr.	Percent Of L/I Not Initially Distr.		
Military Specifications	212	202	525,259	374,668	71.3	150,591	28.7	2,478	1855	710	95.2	4.8
Military Standards	78	73	162,204	119,490	73.6	42,714	26.4	2,080	1637	548	93.5	6.5
Data Item Descriptions	25	18	109,560	99,066	90.4	10,494	9.6	4,382	5504	420	72.0	28.
Naval Instructions	68	0	16,882	0.0	0.0	16,882	100.0	248	0.0	248	0.0	100
Qualified Products Lists	57	57	92,178	63,709	69.1	28,469	30.9	1,617	1,118	499	100.0	0.
Federal Specifications	54	44	68,685	30,850	44.9	37,835	55.1	1,272	701	701	81.4	44
Federal Standards	11	3	11,921	8,362	70.1	3,559	29.9	1,084	2,787	324	27.2	72.8
Industry Standardization Documents	44	32	57,262	35,704	62.3	21,558	37.7	1,301	1,116	490	72.7	27.3
TOTAL	549	429	1,043,951	731,849	70.2	312,102	29.8	1,902	1,706	568	78.1	21.9

the document categories, with the exception of Navy Instructions and Federal Specifications, required initial distribution. An estimated 70.2% of the total quantity received at NPFC was distributed initially and the remaining 29.8% was for stock only. Average number of copies per line item procured initially amounted to 1902.

Table 4.2-2

As can be seen from this table, only 244 of the total 574 sampled records contained page count information, and average number of pages per document was 14.5. It is interesting to note that only 43.2% of the line items carried by the NPFC required any subsequent replenishment activity (after they were distributed and stocked initially), and the average quantity per replenishment action was 430.

It is also noteworthy that 63.3% of all replenishment actions took place in 1976, 1977 and 1978 as compared to only 23.2% for the years 1973, 1974 and 1975. This degree of variation could be partly explained by the fact that records on many of the line items no longer carried by the NPFC may be purged or transferred to another file. Based on the recent years data, it can be concluded that, on average, about 20% to 23% of the line items are replenished every year. This means that the vast majority of the line items are replenished approximately once every 4.5 to 5 years. For those line items that were replenished (i.e. 43.2% of the line items), the average number of replenishment actions per line item was 1.5.

Table 4.2-3

About 59.7% of the documents sampled were revised one or more times with 28.2% of those revised requiring one revision, 24.4% requiring two revisions, 18.3% requiring three revisions and 28.4% requiring more than three revisions. It should be noted that 74.7% of the Military Specifications and 83.5% of the Military Standards required revision.

TABLE 4.2-2 ANALYSIS OF REPLENISHMENT ACTIONS AND FREQUENCY

TABLE 4.2-2 ANALYSIS OF REPLENISHMENT ACTIONS AND FREQUENCY																	
DOCUMENT CATEGORY	Document Page Count		Replenishment Actions		Replenishment Frequencies			Replenishment Action Distribution by Year									
	No. Of Records Sampled	With Page Ct. Range Indicated	No. Line Items Repl. Action	Ratio Of Repl. Per L/I	Percent Of Total L/I Repln. Qty	Avg. Qty Per Repln. Qty	Avg. Range Of Repln. Qty	Prior 1969	1969-70	71-72	73-74	75	76	77	78		
Military Specifications	229	88	106	175	1.6	46.2	66,050	377.4	200-3,000	.5	13.1	9.1	12.5	6.1	17.1	16.5	23.4
Military Standards	79	32	31	36	1.1	39.0	14,700	474.1	100-2,500	2.7	2.7	5.5	2.7	13.8	47.2	19.4	
Data Item Descriptions	25	18	9	16	1.7	36.0	5,600	329.4	100-500	0	0	0	0	0	18.0	58.0	23.5
Naval Instructions	72	44	34	71	2.0	47.0	42,062	592.4	50-2,600	0	0	0	9.8	28.1	21.1	18.3	22.5
Qualified Products List	57	33	20	22	1.1	35.0	7,500	340.9	1,100	0	0	0	18.1	27.2	22.7	31.8	
Federal Specifications	55	6	30	50	1.6	54.0	27,845	556.9	200-4,500	2.0	2.0	4.0	1.1	8.0	14.0	32.0	19.0
Federal Standards	11	0	9	10	1.1	81.0	1,600	160.0	100-400	0	0	10.0	0	70.0	0	0	20.0
Industry Standardization Documents	46	23	9	11	1.2	19.0	2,900	263.0	500-100	0	0	9.0	19.0	18.0	9.0	18.0	27.0
TOTAL	574	244	248	391	1.5	43.2	168,257	430.3	50-4,500	.7	6.6	5.6	10.7	12.5	17.0	23.4	22.9

TABLE 4.2-2 ANALYSIS OF DOCUMENT REVISIONS

DOCUMENT CATEGORY	Document Revisions				Percent of Documents with Revision					
	No. Of Record Sampled	No. Of Documents Revised	Percent Revised	No. Revision	One Revision	Two Revision	Three Revision	Four Revision	Five Revision	Six Or More Revision
Military Specifications	229	171	74.7	25.3	26.9	25.7	21.0	8.7	7.6	9.9
Military Standards	79	66	83.5	16.4	28.7	25.7	12.1	12.1	6.0	15.1
Data Item Descriptions	25	10	40.0	60.0	5.0	10.	30.	10.	0.	0.
Naval Instructions	72	35	48.6	51.4	42.8	28.5	14.2	11.4	17.1	0.0
Qualified Products Lists	57	0.	0.	0.	0.	0.	0.	0.	0.	0.
Federal Standards	11	6	54.5	45.5	100.0	0.	0.	0.	0.	0.
Industry Standardization Documents	46	14	30.4	69.6	14.2	28.5	28.5	7.1	7.1	14.2
Federal Specifications	55	41	74.5	25.5	24.3	19.5	17.0	7.3	14.6	17.0
TOTALS	574	343	59.7	40.3	28.2	24.4	18.3	9.3	8.7	10.4

Table 4.2-4

Only about 10.1% of the line items sampled were amended one or more times with 51.7% of those requiring one amendment, 22.4% requiring two amendments, 20.6% requiring three amendments and the rest requiring more than three amendments. Only 2.5% of the Military Standards required amendments as opposed to 16.5% of Military Specifications.

Table 4.2-5

Of all the documents sampled, about 50.4% were published in the years 1975 through 1978. The lower percent of publications (9.4%) for 1978 can be largely explained by the fact that the data was collected in November, 1978. Based on this explanation and the data for recent years, it can be safely stated that about 13% to 14% of the total are new documents introduced into the NPFC each year. In other words, an average age of the vast majority of documents is about 7 to 8 years.

TABLE 4.2-4 ANALYSIS OF DOCUMENT AMENDMENTS

DOCUMENT CATEGORY	Document Amendments			Percent of Documents with Amendments			
	No. Of Documents AMDT.	Percent AMDT.	No AMDT.	First AMDT.	Second AMDT.	Third AMDT.	Fourth Or More AMDT.
Military Specifications	38	16.5	83.4	55.2	21.0	18.4	5.2
Military Standards	2	2.5	97.5	100.0	0.	0.	0.
Data Item Descriptions	0.	0.	100.0	0.	0.	0.	0.
Naval Instructions	0.	0.	100.0	0.	0.	0.	0.
Qualified Products Lists	4	7.0	93.0	25.	25.	25.	25.
Federal Specifications	11	20.0	80.0	27.2	36.3	36.3	0.
Federal Standards	0.	0.	100.0	10.1	0.	0.	0.
Industry Standardization Documents	3	6.5	93.5	100.0	0.	0.	0.
TOTALS	58	10.1	89.8	51.7	22.4	20.6	5.1

TABLE 4.2-5 ANALYSIS OF DOCUMENT AGE												
DOCUMENT CATEGORY	Records Sampled	Prior To										
		1970	1971	1972	1973	1974	1975	1976	1977	1978		
Military Specifications	229	20.5	5.6	6.1	5.2	9.6	7.8	13.1	12.6	11.7	7.4	7.4
Military Standards	79	16.4	3.7	5.0	10.1	7.5	18.9	12.6	10.1	5.0		
Data Item Descriptions	25	0.	0.	4.0	16.0	4.0	12.0	20.0	24.0	8.0		
Naval Instructions	72	11.1	4.1	11.1	6.9	4.1	6.9	13.8	13.8	8.3		
Qualified Products List	57	5.2	0.	5.2	5.2	7.0	1.7	8.7	14.0	17.5	35.0	
Federal Specifications	55	16.3	1.8	7.2	5.4	20.0	9.0	12.7	16.3	5.4	5.4	
Federal Standards	11	45.4	9.0	0.	9.0	0.	9.0	0.	27.2	0.0		
Industry Standardization Documents	46	6.5	6.5	10.6	10.8	0.	8.6	15.2	15.2	21.7	4.3	
TOTAL	574	15.3	4.1	6.7	7.1	8.5	7.4	14.1	13.5	13.4	9.4	

4.3 DOCUMENT MORPHOLOGICAL^{*} ANALYSIS

4.3.1 Introduction

The document morphological analysis focused on identifying the characteristics of the warehouse controlled document categories stocked by NPFC. Analysis of documents required identifying selected elements that describe document characteristics and selection of sample documents for data extraction. Documents utilized for morphological analysis were ordered as part of the Requisition Receipts Analysis effort. The number of documents selected in each category approximately reflect the proportion of line items stocked for that category to the total line items stocked for all document categories.

4.3.2 Objectives of Morphological Analysis

The analysis of morphological elements was conducted to provide a characterization of the stocked document base by document category.

The objectives of the analysis effort were:

- Identification of morphological characteristics by document category.
- Development of the necessary baseline information required to examine alternative printing technologies.
- Identification of significant variations in the document morphological characteristics between document categories.

4.3.3 Data Collection Methodology

Documents utilized for the morphological analysis were requisitioned from existing NPFC stock. The number of line items requisitioned for each document category was based on the relative proportion of that category to the total

*Refers to the physical characteristics of the documents, including their contents.

of warehouse controlled line items. A total of 281 documents were examined. The document categories and respective percentages from Table 4.3-1 are:

<u>Category</u>	<u>Percent Of Sample</u>
Military Specifications	45.1%
Military Standard	16.3%
Data Item Descriptions	7.4%
Naval Instructions	7.1%
Qualified Products Lists	7.8%
Federal Specifications	11.0%
Federal Standards	5.3%

This distribution of document categories reflects the material examined, and is not necessarily in proportion to the actual number of line items stocked. Requisitions were placed without consideration of line item content, and, as a consequence, a percentage of the material received was not suitable for the proposed analysis (e.g., Federal Standards: Color Chips).

Specific types of information extracted from each document included:

- Document type and preparing activity
- Cover material
- Document dimensions and binding method
- Inserts and foldouts
- Technical line drawings
- Number of tables by type (Text vs. Numeric)
- Number of photographs and illustrations

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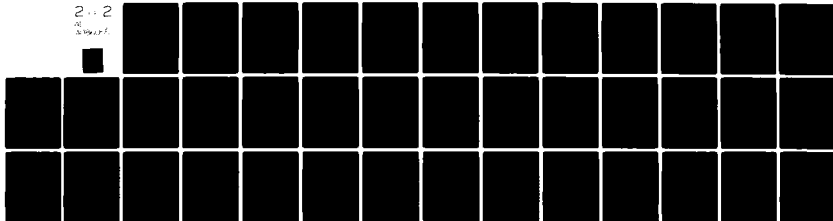
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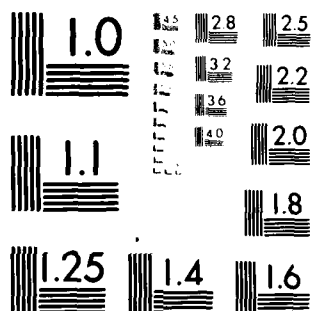
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- Type of print
- Column layout
- Printed area size
- Number of lines and characters per inch
- Page count
- Percent composition of document in terms of text, tables, illustrations and line drawings.

All sampled documents were examined for the above listed items and appropriate information was extracted.

The extracted information was summarized and is presented in the Document Morphological Analysis Tables 4.3-1 to 4.3-4. The data was summarized to provide composite characterizations by document category. In addition, analysis of print characteristics and density was compiled by document category, as reflected in Tables 4.3-4 and 4.3-5.

The extraction of data required documents to be individually reviewed and categorized. Those document categories not examined were excluded from the analysis due to restrictions on distribution. The excluded categories were Association/Society Documents, Classified Documents and some Naval Instructions.

4.3.4 Summary of Morphological Analysis

Significant information extracted from the document morphology analysis is summarized in the following tables:

Table 4.3-1 Document Morphological Analysis - Physical Structure

Table 4.3-2 Document Morphological Analysis - Document Content

Table 4.3-3 Document Morphological Analysis - Composition
Content

Table 4.3-4 Document Morphological Analysis - Content Distribution
and Character
Estimation.

A summary of the major finding is provided in the following paragraphs.

Table 4.3-1 Physical Structure

Of the documents examined, 91.8 percent did not have covers separate from the document binding or Text content. The most common binding method used was staple and drill, 54.8 percent, and drill only with 19.9 percent. About 12 percent of the documents examined did not have any format binding.

Documents with outside edge dimensions less than 8.5 x 11.0 inches constituted 74.0 percent of the sample. The majority of all the documents examined had outside dimension ranging from 7.5" to 8.0" x 10.5" to 11.0". The outside dimension of 24.5 percent of the documents examined exceeded 8.5 x 11.0 inches.

Military Specifications and Naval Instructions were the categories of documents with foldout material. Of the total sample, 2.4 percent of the documents had foldout material. The average page count for the total sample was 14.7 pages per document, ranging from a 2.3 page average for Data Item Descriptions to a 29.3 page average for Military Standards

TABLE 4.3-1 DOCUMENT MORPHOLOGICAL ANALYSIS: PHYSICAL STRUCTURE

TABLE 4.3-1 DOCUMENT MORPHOLOGICAL ANALYSIS:PHYSICAL STRUCTURE														
DOCUMENT CATEGORY	SAMPLE		COVER MATERIAL (PERCENT)		BINDING METHOD (PERCENT)			DIMENSIONS (PERCENT)		FOLDOUTS		PAGE COUNT		
	NUMBER OF DOCUMENTS	PERCENT OF SAMPLE	NO SEPERATE COVER	PAPER COVER ATTACHED	STAPLE & DRILL	DRILL ONLY	FOLD	NO BINDING	DRILL & FOLD	LESS THAN: 8.5 x 11.0	PERCENT WITH		PERCENT WITHOUT	AGE NO. OF PAGES
MILITARY SPECIFICATIONS	127	45.1	100.0	0.	76.3	14.9	3.1	2.3	3.1	54.3	45.7	4.7	95.3	15.6
MILITARY* STANDARDS	45	16.0	51.0	49.0	51.0	8.8	0.	17.7	22.2	82.2	17.8	0.	100.0	29.3
DATA ITEM DESCRIPTIONS	21	7.4	100.0	0.	4.7	61.9	0.	9.5	23.8	100.0	0.	0.	100.0	2.3
NAVAL INSTRUCTIONS	20	7.1	100.0	0.	15.0	250		30.0	30.0	100.0	0.	5.0	95.0	13.8
QUALIFIED PRODUCTS LISTS	22	7.8	100.0	0.	13.6	36.3	0.	50.0	0.	100.0	0.	0.	100.0	3.1
FEDERAL SPECIFICATIONS	31	11.0	100.0	0.	70.9	12.9	0.	0.	16.1	87.0	13.0	0.	100.0	11.9
FEDERAL STANDARDS	15	5.3	100.0	0.	33.3	20.0	0.	26.6	20.0	100.0	0.	0.	100.0	4.4
TOTAL	281	100	91.8	8.2	54.8	19.9	1.4	12.0	11.7	74.0	24.5	2.4	97.6	14.7

*Includes all categories/formats of Military Standards

Table 4.3-2 Document Content

The content of documents was categorized as:

- Tables (Numeric and Text)
- Print Type
- Column Layout
- Technical Drawings
- Illustrations
- Photographs

As is illustrated in Table 4.3-2, all document categories sampled had tables, with primarily text content tables constituting 51.1 percent of all tables. Overall, 35.2 percent of the documents examined did not have any tables, and 33.8 percent had 3 or fewer.

Two modes of print type were noted, conventional print type constituting 96.7 percent of the documents reviewed, and computer generated print comprising 2.3 percent. Reduced print type comprised 56.9 percent of all conventional print mode, and .03 percent of computer generated print.

The layout of print columns was primarily vertical, 96.4 percent, with horizontal or a mixture of horizontal and vertical occurring in 3.6 percent of the sample.

Technical line drawings were found in all document categories except Data Item Descriptions, Naval Instructions and Federal Standards. Of all the documents examined, 78.2 percent were without any drawings and an additional 16.0 percent had less than 3 drawings. Illustrations appeared in all document categories except Qualified Products Lists, with 36.7 of the examined documents containing some form of illustration. Military Specifications and Standards were the only two document categories with reproduced photographs. Reproduced photographs were found in 22.2 percent of Military Standards and .07 percent of Military Specifications.

TABLE 4.3-2 DOCUMENT MORPHOLOGICAL ANALYSIS-DOCUMENT CONTENT

TABLE 4.3-2 DOCUMENT MORPHOLOGICAL ANALYSIS-DOCUMENT CONTENT													
DOCUMENT CATEGORY	TABLES PER DOCUMENT (PERCENT)				PRINT TYPE (PERCENT)			COLUMN LAYOUT					
	AVG. NO. PER DOCUMENT	NO. PRIMARILY TEXT CONTENT	NO. PRIMARILY NUMERIC CONTENT	0	1-3	4-10	10+	TYPED		COMPUTER			
								FULL SIZE	REDUCED SIZE	FULL SIZE	REDUCED SIZE		
Military Specifications	3.4	41.9	58.1	31.4	32.2	29.1	7.0	48.0	50.3	0.	1.5	.07	97.6 1.5
Military Standards	4.8	77.8	22.2	51.1	22.2	24.4	2.2	26.6	60.0	2.2	11.1	4.4	93.3 2.2
Data Item Descriptions	.14	0.	100.0	95.2	4.8	0.	0.	28.5	68.1	0.	0.	4.8	95.2 0.0
Naval Instructions	.85	41.1	58.9	60.0	25.0	10.0	5.0	40.0	55.0	5.0	0.	5.0	85.0 10.0
Qualified Products Lists	2.5	63.6	36.4	0.	85.0	10.0	5.0	27.2	72.8	0.	0.	0.	100.0 0.
Federal Specifications	4.0	60.4	39.6	9.6	54.8	35.4	3.2	41.9	58.1	0.	0.	0.	100.0 0.
Federal Standards	.33	80.0	20.0	73.3	26.7	0.	0.	40.0	60.0	0.	0.	0.	100.0 0.
Totals		51.1	48.9	36.2	35.8	22.4	5.6	39.8	58.9	1.0	.3	1.5	96.4 2.1

DOCUMENT MORPHOLOGICAL ANALYSIS: (TABLE 4.3-2 CONTD.)

DOCUMENT CATEGORY	Technical Line Drawings Per Document (Percent)					Illustrations Per Document (Percent)					BLACK & WHITE PHOTOS PERCENT	
	Avg. No. Per Document	0	1-3	4-10	10+	Avg. No. Per Document	0	1-3	4-10	10+	Doc. With Photos	Doc. Without Photos
Military Specifications	.92	76.3	18.8	4.7	0	1.0	60.0	22.8	14.1	2.3	.07	99.3
Military Standards	2.4	48.8	33.3	15.5	2.2	1.7	68.8	20.0	6.6	4.4	22.2	77.8
Data Item Descriptions	0.	100.0	0.	0.	0.	.04	90.5	9.5	0.	0.	0.	0.
Naval Instructions	0.	100.0	0.	0.	0.	2.2	70.0	20.0	5.0	5.0	0.	0.
Qualified Products Lists	0.	90.0	5.0	5.0	0.	0.	0.	0.	0.	0.	0.	0.
Federal Specifications	4.8	80.6	16.1	3.2	0.	.80	74.1	16.1	9.6	0.	0.	0.
Federal Standards	0.	100.0	0.	0.	0.	.73	80.0	6.6	13.3	0.	0.	0.
TOTAL		78.2	16.0	5.3	.03	1.0	63.3	17.7	9.6	2.1	3.9	96.1

Table 4.3-3 Composition Characterization

The composition of documents was analyzed by examining the utilization of printed area, and text density. Overall, 64.4 percent of the documents utilized a printed area of 8x6 inches. Lines of text per measured inch was determined, with 35.5 percent of all documents having 6 lines per inch and 26.3 percent of the documents with 7 lines per inch. A count of printed characters per measured horizontal inch indicated that 61.9 percent of all documents had 12 or more characters per inch.

Table 4.3-4 Content Distribution and Character Estimation

Table 4.3-4 provides a summary analysis of document composition by category. Documents examined were assessed for the relative distribution of text, tables, technical line drawings and illustrations. A composite summary by document category was derived to illustrate the composition of an average document within the category.

The distribution by document category of text content ranged from 35.2 percent for Qualified Products Lists to 95.3 percent for Data Item Descriptions. The distribution of tables indicated a range of 4.7 percent for Data Item Descriptions to 64.8 percent for Qualified Products Lists.

Military Specifications and Military Standards were the document categories that included technical line drawings. Naval Instructions and Qualified Products Lists did not include illustrations. The range of illustrations amongst other document categories was .40 percent for Federal Specifications to 15.0 percent for Military Standards.

Printed area utilization exceeded 75.0 percent for all document categories, with a range of 75.0 percent for Qualified Products Lists to 95.0 percent for Federal Specifications. In addition to assessing the utilization of printed area, an average number of characters per document category was developed. The average number of characters by document

TABLE 4.3-3 DOCUMENT MORPHOLOGICAL ANALYSIS: COMPOSITION CONTENT

DOCUMENT CATEGORY	Percent of Documents With Printed Area		Percent of Documents with Lines Per Inch								Percent of Documents with Horizontal Characters Per Inch							
	8x6	7x9	7x7	x<4	4	5	6	7	8	9	9+	x<8	8	9	10	11	12	12+
Military Specifications	70.0	28.3	1.7	.07	2.3	3.1	35.4	27.5	20.4	8.6	1.5	.7	3.1	8.6	14.9	11.0	19.6	41.7
Military Standards	60.0	37.7	2.3	0.	2.2	0.	26.6	26.6	26.6	15.5	2.2	4.4	2.2	0.	17.7	11.1	19.7	44.4
Data Item Descriptions	33.3	66.6	0.	0.	19.0	4.7	33.3	42.8	0.	0.	0.	0.	0.	19.0	4.7	19.0	19.0	38.0
Naval Instructions	85.0	15.0	0.	0.	5.0	0.	55.0	35.0	5.0	0.	0.	0.	0.	0.	30.0	25.0	25.0	20.0
Qualified Products Lists	72.7	27.3	0.	0.	0.	0.	27.2	22.7	36.3	13.6	0.	0.	0.	13.6	9.0	13.6	13.6	50
Federal Specifications	51.6	29.0	19.3	0.	0.	0.	41.9	9.6	48.3	0.	0.	3.2	0.	6.4	3.2	19.3	12.9	54.8
Federal Standard	60.0	40.0	0.	0.	0.	0.	40.0	20.0	40.0	0.	0.	0.	0.	0.	2.0	0.	46.6	33.3
TOTAL	64.4	32.3	3.2	.35	3.2	1.7	35.5	26.3	24.1	7.4	1.0	1.4	1.7	7.1	14.2	13.1	20.6	41.9

TABLE 4.3-4 DOCUMENT MORPHOLOGY ANALYSIS - CONTENT DISTRIBUTION AND CHARACTER ESTIMATION							
DOCUMENT CATEGORY	AVERAGE NUMBER OF PAGES	PERCENT DISTRIBUTION OF DOCUMENT CONTENT				CHARACTER-PRINT ESTIMATION	
		TEXT	TABLES	TECHNICAL LINE DRAWINGS	ILLUSTRATIONS	AVERAGE PRINTED AREA	AVERAGE NUMBER OF CHARACTERS PER DOCUMENT
Military Specifications	15.6	74.2	15.2	6.6	4.0	87.4	28,087.0
Military Standards	29.3	55.2	11.2	18.6	15.0	85.1	25,460.0
Data Item Description	2.3	95.3	4.7	0.	0.	94.2	12,857.0
Naval Instructions	13.8	78.7	8.5	0.	12.5	83.0	23,059.0
Qualified Products Lists	3.1	35.2	64.8	0.	0.	75.0	4,666.0
Federal Specifications	11.9	95.2	3.3	0.	.4	95.0	36,265
Federal Standards	4.4	86.0	7.6	0.	6.4	77.0	7,844.3
Totals	14.7						

category ranged from 4,666 for Qualified Products Lists to 36,265 for Federal Specifications. The utilization of printed area and average number of characters indicated a significant correlation by document category.

4.4 RECEIPT OF REQUISITIONS

4.4.1 Introduction

One hundred and eight orders (108), requesting a total of 488 line items, were placed for documents identified as stocked by the NPFC. The volume and selection of document categories was based on those enumerated in the Procurement Record Files and DODISS. Requisitions were mailed to the NPFC over a period of six weeks in groups of five orders, each order containing about five line items.

4.4.2 Objectives of Document Requisition Analysis

The objective of analyzing the requisition process was to assess:

- Overall duration of requisition process, from mailing of orders to receipt of requested items
- NPFC processing time
- Completeness of requisitions filled
- Identification of exceptions to requisition processing.

In addition, the requisitions were placed to assess the accuracy of procurement records and to provide the documents required for morphological analysis.

4.4.3 Data Collection Methodology

As noted, requisitions were placed for line items stocked at NPFC. Line item stock numbers were obtained from the sampled procurement records and DODISS. The number of line items requested under each document category reflect approximately the relative proportion of line items under that

category to all line items stocked. All requisitions were submitted by using DD-1425 Document Requisition Forms. Specific information extracted on each requisition placed to NPFC included the following:

- Order Characteristics
 - Date order placed
 - Date order received at NPFC
 - Date processing completed by NPFC
 - Date requested material received at the requisitioning source
- Document Characteristics
 - Document category
 - Number of amendments
- Processing Characteristics
 - Number of line items ordered
 - Number of line items received
 - Restrictions (Code B, E or Other)
 - Additions and changes
 - Bin Station code

Computation of NPFC processing time and overall duration of requisition processing time were computed using dates stamped on each order (by 411-Mail and File Administration and Packing Station), the order mailing date and the actual date the order was received. NPFC processing time is measured in terms of actual working days while overall duration is measured in calendar days. Document category and number of amendments identified requisitioned material, amendments requisitioned as part of a document were compared for reconciliation to amendments received. The reconciliation of number of line items ordered and received provided an indication of NPFC's effectiveness.

4.4.4 Analysis of Requisition Receipts

Summary results are presented in Requisition Receipt Analysis Tables 4.4-1 and 4.4-2. The maximum response period for any given order was 28 calendar days, with 27.2 percent of orders received within 14 days, 26.8

percent within 15 to 21 days and 15.7 percent within 22 to 28 days. NPFC processing time, measured in working days, encompassed a maximum of 5 days, with 35.2 percent of the requisitions processed within 1 day, 47.0 percent within 2 days, 7.8 percent within 3 days and the remaining 9.8 percent within 5 days. Of the total requisitions placed, 13.8 percent were not provided due to procedural regulations or sponsor restrictions, and 17.2 percent were not received.

Examination of Table 4.4-2 indicates the provision of line items requisitioned. Of the total 488 line items requisitioned, 0.4 percent were out of stock (Code B) and 2.6 percent were not stocked (Code E) by NPFC. Line items requisitioned and restricted constituted 15.3 percent, while line items requisitioned and not received comprised 17.2 percent of total line items requested.

Of the requisitions placed, one (1) was received with material not requested and one with incorrect material substituted for requested documents. The majority of requisition were received as single postal packages, with 8.0 percent received as multiple packages.

Four requisitions improperly coded or identified were forwarded to NPFC. Of the five incorrectly coded line items, only one was not provided, the remaining four were correctly deciphered and provided within ten working days.

Table 4.4-1 <u>REQUISITION RECEIPT ANALYSIS</u>													
Total Order	Percent of Orders Received Within Specified Days						Percent of Orders Processed Within Specified Days						
	1-14	15-21	22-28	Over 28	Percent Of Orders Not. Rec.	Percent Restricted	Total	1	2	3	4	5	Over 5
30	27.2						18	35.2					
29		26.8					24		47.0				
17			15.7				4			7.8			
17					15.7		5					9.8	
15						13.8							
108							51						

Table 4.4-2 <u>REQUISITION RECEIPT ANALYSIS</u>																	
Orders		Out of Stock, Code B				Not Stocked, Code E				Other Restrictions				No Action by NPFC			
Total No. Of Total L/I Orders Ordered		No. Of Orders	% Of Orders	No. Of L/I	% Of L/I	No. Of Orders	% Of Orders	No. Of L/I	% Of L/I	No. Of Orders	% Of Orders	No. Of L/I	% Of L/I	No. Of Orders	% Of Order	No. Of L/I	% Of L/I
108	488	2	1.8	2	4.1	13	12.0	14	2.6	15	13.8	75	15.3	17	15.7	84	17.2

4.5 SURVEY OF NPFC CUSTOMERS

4.5.1 Introduction

In order to identify and characterize the NPFC customer base a survey was conducted of selected organizations. These organizations were identified through a random examination of orders received at 3015-Programming Branch.

Organizations selected for the survey were chosen to provide a balanced sample of large and small corporate customers since they account for about 80 percent of orders. In addition to the mail survey, seven representatives of the organizations were contacted by telephone or in person.

4.5-2 Objectives of Customer Survey

The method of the survey was to facilitate the following objectives:

- Identification of document categories requisitioned
- Estimation of document quantities demanded
- Assessment of customer perception of NPFC service and document quality.

4.5.3 Data Collection Methodology

Surveyed organizations were selected from orders received at 3015-Programming Branch. Sixty seven organizations were contacted, sixty by mail survey, and seven by interview or telephone.

The questionnaire requested information in four categories:

- General information about the organization
- Documents and quantities ordered from NPFC

- Order particulars and NPFC responsiveness
- Miscellaneous (order frequency and document format requirements).

Respondents were requested to provide information about the organization, staffing, sales, nature of business and organizational affiliations. Information regarding document categories utilized, volume and frequency of requisition, reason for requisitions and NPFC service responsiveness were requested. In addition to specific response questions, respondents were provided an opportunity to comment on their experience with the service and make suggestions for procedural changes.

4.5.4 Analysis of Survey Responses

At the time of the reports preparation about 30 percent of the mailed surveys had been returned. Combined with the seven interviews conducted, the total response to inquiries constituted a limited sample of 25. As a result of the limited response, the analysis is restricted to an overall assessment of customer service perceptions.

Organizations responding to the survey included manufacturing entities, service firms, research and development firms, other DOD contractors and educational organizations.

The majority of organizations were independent entities (52 percent), and the remaining were affiliated with large corporations. Staffing ranged from less than 100 to more than 2,000. Sales volume ranged from less than one million to more than twenty-five million dollars annually.

Military Specifications and Standards constituted the majority of document categories ordered. Federal Specifications and Standards, Data Item Descriptions and Qualified Products Lists categories were also ordered frequently by the users. All customers indicated that the majority of orders were placed by mail. Approximately half of the respondents indicated that they had telephoned requisitions occasionally.

The majority of respondents indicated that orders were completed and returned within 3 weeks, the remaining balance were received within 4 to 5 weeks with a small proportion received after 6 weeks. Of the orders processed, respondents indicated that the orders were completely filled approximately 75 percent of the time. Orders partially filled were due primarily to Out of Stock (Code B) or Non-Stocked (Code E) material. Incorrectly filled orders (orders received with the wrong material) occurred infrequently, but was mentioned by two of the interviewed respondents.

The quality of documents received was judged satisfactory by 49.0 percent of the respondents and highly satisfactory by the remaining 51.0 percent. Service assessment indicated that approximately 50 percent were satisfied most of the time, and 30.0 percent considered the service as fair.

The primary reason for ordering documents was indicated to be for specific contract or project use, with orders for multiple contract use and for library stocking constituting a substantial proportion of all orders placed. All respondents indicated that the preferred format of documents was printed, and the majority also indicated that they had access to microfiche readers.

Due to the limited amount of responses received, the analysis was necessarily restricted to an evaluation of surveys based on a general review of responses. The interviews conducted indicated an overall positive response to the service provided, qualified by inquiries at obtaining more information from NPFC on services and questions about the back order and stock status procedures.

4.6 ANALYSIS OF PHYSICAL TRACKING OF REQUISITION PROCESSING

4.6.1 Introduction

Requisition tracking was initiated to identify the activities and times associated with processing orders received at NPFC. Requisitions received by mail and telephone were identified and included in the analysis.

4.6.2 Analysis Objectives

The tracking of orders was conducted to supplement and support operations descriptions, and to characterize the activities necessary to process a requisition. Analysis objectives included:

- o Measurement of processing times by branch.
- o Identification of branches and stations involved in typical order processing.
- o Characterization of activities required to process the orders by branch or station.

4.6.3 Data Collection Methodology

A Requisition Tracking Form designed by Sterling was attached to requisitions selected for tracking at 411-Mail and File Administration Branch for mail orders, and at 1052-RISE-Customer Service for telephone orders.

A total of 200 orders (160 mail orders and 40 telephone orders) were selected. Mail orders were to be selected and tracked in groups of 50 for each of the 4 days. Telephone orders were selected at a rate of 10 a day for 4 days. Selection of specific requisitions was staggered over the working hours of the day to minimize any processing distortions.

As the selected requisitions passed through various branches and stations, employees were instructed to annotate the attached tracking form. The information posted to the form included:

- o Branch-section or station code
- o Time/date received and completed
- o A concise activity description
- o Branch-section or station forwarded to.

Forms received at packing stations were also annotated for time and date of completion.

4.6.4 Summary Analysis of Tracking of Requisitions

The tracking of 200 requisitions resulted in 142 completed processing forms (25 telephone and 117 mail orders) for analysis. Requisitions utilizing the DD-1425 order form comprised 92.9 percent of the sample, with the remaining balance utilizing the DD-1348. As a consequence, the majority of tracked orders were placed for warehouse controlled material.

Four branches and the four bin stations were identified:

- o 411-Mail and File Administration
- o 1051-Customer Service Division-STAR Section
- o 1052-Customer Service Division-RISE Section
- o 3015-Programming Branch
- o Bin Stations 1, 11, 13, and 14.

All requisitions passed through 411-Mail and File Administration, and Customer Service 1051 STAR Section or 1052 RISE Section. Of the orders tracked, 4.9 percent were rejected by 105-Customer Service staff due to lack of sufficient information on request, and the balance of 95.1 percent passed on to 3015-Programming Branch and Bin Stations for processing.

Table 4.6-1

Telephone orders were processed within an average of about 5 hours 37 minutes, with 72.0 percent processed on the same day. The longest time elapse occurred between bin station activity and packing, averaging about 3 hours and 27 minutes.

Mail orders were processed within an average of about 18 hours and 2 minutes, with 10.2 percent completed on the same day. The primary processing delay, as with telephone orders, occurred between bin stations and packing, averaging about 6 hours and 34 minutes.

Processing time by branches averaged about 1 hour and 48 minutes, with 3015-Programming Branch averaging 14.33 minutes and 1052-RISE Section averaging about 5 hours for mail orders and 45 minutes for processing telephone orders. Bin station processing time averaged about 21.19 minutes, with station 11 processing the largest proportion of orders and averaging 26.57 minutes per order.

TABLE 4.6-1 REQUISITION PROCESSING

TABLE 4.6-1 REQUISITION PROCESSING																		
ORDER TYPE	ORDER					AVG. PROCESSING TIME PER BRANCH & STATION*										Overall Time (hours-min.)		
	Total Orders	% of Orders Rejd.	% Compl. Same Day	Order Request Form		Avg. Proc. Time Branch (Min.)					Avg. Proc. Time Station-3013 (Min.)				Packing Delay (hours-min.)			
				1425	1348	411	1051	1052	3015	1	11	13	14					
Phone Orders	25	0	72.0	100.0	0			-	-	45.0	14.65	5.0	6.10	6.36	11.75	3:27	5:37	
Mail Orders	117	5.9	10.2	92.0	8.0	11.91	92.93	299.75	14.33	28.72	26.57	6.50	13.0	6:34	18:02			
TOTALS	142	4.9	21.1	92.9	7.1													

*Time based on working hours.

4.7 ESTIMATION OF CURRENT DEMAND BY CUSTOMER AND DOCUMENT CATEGORIES (ROUTINE ORDERS)

This section attempts to estimate the current demand from routine orders (approximately 55% of total requisition demand for warehouse controlled material) in terms of the following specific items:

a. By Customer Category

- Number of orders per year
- Number of line item requests per year
- Number of copies of documents demanded per year

b. By Document Category

- Number of line item requests per year
- Number of copies of documents demanded per year
- Number of pages demanded per year

The basic data used for developing these estimates comes from the following sources.

1. Order analysis summaries (Section 4.1)
2. Document morphology analysis summaries (Section 4.3)

The estimated demand results by customer category are summarized in Table 4.7-1 and those by document category are summarized in Table 4.7-2.

Significant routine order demand highlights* are summarized below:

- Number of orders processed per year - 321,048
- Number of line item requests per year - 1,445,316
- Number of document copies per year - 3,541,150
- Number of pages per year - 58,761,316

It should be noted that the maximum number of line item requests were for Military Specifications (586,799) followed by Military Standards (508,751).

*Based on 1978 order data since the study was conducted during that year.

TABLE 4.7-1 ESTIMATED ANNUAL DEMAND BY CUSTOMER CATEGORY (ROUTINE ORDERS)

CUSTOMER CATEGORY	PERCENT DISTRIBUTION OF TOTAL ORDERS	ESTIMATED NO. OF ORDERS PER YEAR	AVERAGE NO. OF L/I PER ORDER	ESTIMATED NO. OF L/I REQUESTS PER YEAR	AVG. QUANTITY PER ORDER	ESTIMATED DEMAND PER YEAR
NAVY	8.4	26,970.0	3.84	103,438.0	12.42	334,927
ARMY	4.6	14,770.0	5.67	83,727.0	10.73	158,448
AIR FORCE	.4	1,285.0	4.20	5,397.0	9.2	11,822
ASSOCIATED DOD AGENCIES	3.0	9,631.0	3.34	32,154.0	9.08	87,412
ASSORTED GOVT AGENCIES: FEDERAL AND STATE	.3	963.0	3.38	3,257.0	11.45	11,027
CORPORATIONS AND PRIVATE ORGANIZATIONS	80.0	257,794.0	4.52	1,166,131.0	10.84	2,793,739
ASSORTED NON-GOVERNMENT ORGANIZATIONS	.7	2,250.0	3.91	9,982.0	13.95	31,391
FOREIGN PRIVATE ORGANIZATIONS	1.3	4,175.0	6.80	28,390.0	17.00	70,975
FOREIGN MILITARY ORGANIZATIONS	1.0	3,210.0	4.00	12,840.0	12.90	41,409
TOTALS	100.0	321,048.0	4.49	1,445,316.0	10.77	3,541,150

TABLE 4.7-2 ESTIMATED ANNUAL DEMAND BY DOCUMENT CATEGORY (ROUTINE ORDERS)

DOCUMENT CATEGORY	PERCENT DISTRIBUTION OF LINE ITEMS REQUESTED	ESTIMATED NO. OF LINE ITEMS REQUESTED PER YEAR	AVERAGE QUANTITY PER LINE ITEM	ESTIMATED QUANTITY PER YEAR	AVERAGE No. OF PAGES PER DOCUMENT	ESTIMATED No. OF PAGES DEMANDED PER YEAR
MILITARY SPECIFICATIONS	40.6	586,799.0	1.92	1,128,649.0	15.6	17,606,924
MILITARY STANDARDS	35.2	508,751.0	2.50	1,272,539.0	29.3	37,285,393
DATA ITEM DESCRIPTIONS	2.7	39,024.0	1.80	69,997.0	2.3	160,993
DOD DIRECTIVES	3.0	43,359.0	1.29	55,777.0	13.8	769,723
NAVAL INSTRUCTIONS	1.7	24,570.0	1.94	47,563.0	13.8	656,369
HANDBOOKS	1.4	20,234.0	2.96	59,876.0	-	-
QUALIFIED PRODUCTS LISTS	9.5	137,305.0	1.86	255,854.0	3.1	793,147
FEDERAL SPECIFICATIONS	3.4	49,141.0	2.0	98,282.0	11.9	1,169,556
FEDERAL STANDARDS	2.2	31,797.0	2.28	72,548.0	4.4	319,211
INDUSTRY STANDARDIZATION DOCUMENTS	.3	4,336.0	3.76	16,286.0	-	-
TOTALS	100.0	1,445,316.0	2.2	3,212,215.0	-	58,761,316

5.0 OBJECTIVES AND MEASURES OF PERFORMANCE

5.1 Introduction

As mentioned earlier, NPFC is a complex organization as reflected by the range of its activities as well as size. Effective management and monitoring of such an organization and its performance is a relatively difficult task. One of the tools available to management to identify potential areas for improvement and analyze feasible alternatives is the use of properly designed performance measures that can gauge operational effectiveness on a continuous basis.

A number of performance measures are currently used by NPFC. The significant among these performance measures include:

- Percent of orders filled (includes partially filled orders)
- Workload backlog measures (e.g. number of man-days work available, number of man-days work completed, etc.)
- Number of line items backlogged
- Use of standard activity times
- Ratio of standard man-days to actual man-days used.

These measures are appropriate and adequate in assessing the performance of some branches and operational activities. The purpose of this section is to identify and suggest additional measures for the consideration of NPFC management, that can supplement and complement the existing ones.

5.2 Objectives of Performance Measurement

The fundamental objectives behind NPFC performance measurement can be summarized as follows:

1. To inform management of operational performance in different activity areas on a continuing basis.
2. To identify specific areas, functions and activities requiring review and corrective action by management to improve operational effectiveness and efficiency.
3. To pinpoint specific methods and procedures requiring improvement or alternative approaches.
4. To identify and detect trends that indicate deficiencies in the proper utilization of organizational resources.
5. To provide a basis for reviewing the applicability of technological advances in processing orders, stocking and retrieving documents and controlling overall operations.
6. To accurately reflect operating conditions and satisfy NPFC's external reporting requirements.
7. To provide basis for long-range planning of NPFC operations and assist in prioritizing existing needs and utilization of resources.

5.3 Suggested Measures of Performance

A number of different performance measures in various functional or activity areas are suggested in this section that can be profitably used by NPFC management. These measures are intended to discern trends and identify causes so that management can take corrective action in a timely

manner. A few of the suggested measures are currently utilized by NPFC in somewhat different form (e.g. Percent of Orders Filled or Annual Disposal Volume in measurement tons and cubic feet).

Table 5.3-1 lists significant performance measures for the following major areas:

- Operational Effectiveness
- Staff Productivity
- Inventory Management (including warehouse activities).

For the measures listed, definitions are provided along with their relevancy and usefulness to NPFC. In many instances, variations of the listed measures could be developed and utilized profitably.

Table 5.3-1 Summary of Significant Performance Measures by Activity Area (Continued)

Performance Measure by Area	Definition of Derivation	Relevancy/Usefulness of the Measure
<p>1. <u>Operational Effectiveness</u></p> <p>a. Number of Orders Processed per Manhour</p>	<p>Total orders processed per week or month divided by the number of man-hours expended for the same period.</p>	<ul style="list-style-type: none"> -Measures the overall labor productivity at NPFC or Branch or operation level -Identifies trends for management analysis and action. -Provides a means to validate some time standards with problems
<p>b. Dollar Cost per Order Filled</p>	<p>Total \$ cost of all the activities associated with order processing divided by number of orders processed.</p>	<ul style="list-style-type: none"> -Measures efficiency of operation -To provide a basis for proper balance between somewhat contradictory objectives of supply effectiveness and supply economy -Perform trend analysis -Enables comparison against plans and budget estimates for varying volume levels
<p>c. Average Processing Time (Working Days or Hours)</p>	<p>Can be estimated by tracking order from receipt at NPFC to shipping out by NPFC of all requested items</p>	<ul style="list-style-type: none"> -Measures promptness of supply action at NPFC, Branch or operation level -Measures responsiveness to customer needs -Identifies average stay (in hours and percentages) at each of the Branches or work stations. -Can identify trends and pinpoint areas requiring corrective management action

Table 5.3-1 Summary of Significant Performance Measures by Activity Area (Continued)		
Performance Measure by Area	Definition or Derivation	Relevancy/Usefulness of the Measure
d. Overall Requisition Filling Time (Calendar Days)	It can be estimated through customer survey by measuring average number of elapsed days from mailing of order to receipt of requested items by the customer.	<ul style="list-style-type: none"> -Identifies level of customer satisfaction -Provides a basis to assess the effectiveness of means used for mailing of orders and documents
2. Staff Productivity a. Actual vs. Standard Hours	Compare actual hours spent for a given work volume against the corresponding standard hours.	<ul style="list-style-type: none"> -Determines staff productivity -Identifies trends -Provides basis for management actions to improve efficiency by correcting underlying causes -Helps identify time standards needing management review and revisions, where necessary -Provides basis for budget preparation and cost allocation

Table 5.3-1 Summary of Significant Performance Measures by Activity Area (Continued)		
Performance Measure by Area	Definition or Derivation	Relevancy/Usefulness of the Measure
3. <u>Inventory Management</u> a. <u>Percent of Orders Completely Filled</u>	A ratio of total orders completely filled divided by total number of orders received, excluding rejections because of DOD restrictions.	<ul style="list-style-type: none"> -Reflects overall operational effectiveness and mission readiness -Determines customer satisfaction -Identifies trends and alerts management to analyze specific causes of non-filled orders for corrective action
b. <u>Percent of Line Items Filled (Supply Availability Rate)</u>	A ratio of line items supplied to total line items requested.	<ul style="list-style-type: none"> -Same usefulness as above, except that this measure would be more precise than the above and can supplement it -Provides basis for analyzing causes (Code B, Code E, Other Restrictions)
c. <u>Percent of Requisitions (or Line Items) on Back Order</u>	A ratio of requisitions (or line items) not filled because of out-of-stock condition to total received.	<ul style="list-style-type: none"> -Lower percentage reflects better mission readiness and effectiveness -Provides basis for analyzing causes of back orders and prompts corrective action -Back orders indicate need for duplication of some activities -Measures customer satisfaction
d. <u>Aging of Back Orders</u>	Breakdown of back orders or line items not supplied by days or weeks in waiting.	<ul style="list-style-type: none"> -Indicates the severity of the problem and need for specific corrective actions.

Table 5.3-1 Summary of Significant Performance Measures by Activity Area (Continued)

Performance Measure by Area	Definition of Derivation	Relevancy/Usefulness of the Measure
e. Warehouse Refusal Rate	A ratio of line items can not be supplied by the warehouse to the total line items requested of warehouse (or stocked in warehouse).	<ul style="list-style-type: none"> -Measures degree of compatibility between stock records and material actually stocked in the warehouse -Also reflects the ability of warehouse persons to locate the items, if in stock -Pinpoints discrepancies between recorded stocks and actual stocks, where applicable -Measures trends and prompts management action
f. Warehouse Space Utilization	Can be estimated by dividing cubic feet equivalent of actual document storage with the total cubic feet storage available.	<ul style="list-style-type: none"> -Measures the effectiveness with which overall space and individual bins are utilized -Identifies areas for management actions to improve utilization through better layout and equipment
g. Disposal Rates	A ratio of number of line items (or pages) disposed off to the corresponding number of total line items (or pages) stocked.	<ul style="list-style-type: none"> -Identify overall wastage and trends -Pinpoints causes for appropriate management action within and without NPFC -Provides basis for management planning

6.0 RECOMMENDED BASELINE MODIFICATIONS

6.1 Introduction

Observation and analysis of NPFC operations and methods indicates the need for review of some existing procedures. The recommendations enumerated in the following sections have been organized by functional areas and focus on:

- Requisition Processing
- Reporting Activity
- Administration

6.2 Objectives of Recommendation for Baseline Modifications

The recommended baseline modifications enumerated are to facilitate the mission and enhance the effectiveness of NPFC. The objectives included:

- Improve NPFC responsiveness to customers
- Facilitate activities in processing customer requisitions
- Develop administrative procedures to improve the management of activities.

6.3 Criteria for Baseline

Analysis of operations required a comprehensive examination of existing procedures, a review of current activity and an assessment of service provision effectiveness.

Specific modifications were identified as a result of the analysis effort and were reviewed with respect to the specific deficiencies and potential

benefits. Evaluation of recommendations was governed by:

- Expediency of modification implementation
- Impact of modifications on existing operations
- Potential benefits derivable from implementation

The recommended modifications reflect the outlined criteria and can be implemented with relatively minor impact on current procedures.

6.4 Summary of Suggested Baseline Modifications

The suggested modifications outlined in Exhibit 6.1 focus on NPFC operations related to warehouse controlled material. The scope of the recommendations encompass the administration, processing and evaluation of activities related to the distribution and control of line items managed.

Recommendations focus primarily on the control and management of line items, quantities of material and replenishment activity. The recommendations emphasize the necessity to establish a comprehensive inventory and stock management procedure that will facilitate control of material distribution and storage. The significant activity areas identified are replenishment, assessment of requisition demand and analysis of inventory. The requisition procedural modifications requires the establishment of a comprehensive information collection and reporting system. The primary elements of such a system are identified in the listed recommendations.

Recommendations focusing on the present Data Collection/reporting system are provided. It is important to recognize that the reporting methods currently utilized have evolved over the years.

Exhibit 6-1 Summary of Suggested Baseline Modifications		
Baseline Modification	Justification	Specific Problems and Deficiencies Corrected and Potential Benefits
<p>1. <u>Requisition Processing</u></p> <p>a. Need to Collect Information on Order Particulars at Customer Service Division</p> <p>b. Revise or Eliminate Restrictions on Quantity of Line Items Ordered</p> <p>c. Notifying Customer of Backorder Status (Code B Requisitions)</p> <p>d. Notifying Customers of Non-Stocked Line Item Status (Code E Requisitions)</p>	<p>Required data on requisition quantity and demand by document category will be available.</p> <p>Analysis of orders indicates that an average order requested 5.5 line items. Existing restrictions seem to be unnecessary, ineffective and are unenforced.</p> <p>Frequent backorder actions and lack of current reconciliation procedure.</p> <p>Frequency of non-stocked actions and lack of current reconciliation procedure.</p>	<p>Existing data collection does not provide necessary data and does not adequately indicate requisitioned volume or content. Improved collection of germane information would facilitate management control of processing activity, demand projections and procurement actions.</p> <p>Existing restrictions reduce service provision effectiveness and are inconsistently applied, elimination would improve service response.</p> <p>Reduction of redundant orders placed by customer and improved accuracy of actual order count by subsequent reduction.</p> <p>Customers notified of line items stocking status and location or source would be better served.</p>

Exhibit 6-1 Summary of Suggested Baseline Modifications (Cont'd)		
Baseline Modification	Justification	Specific Problems and Deficiencies Corrected and Potential Benefits
e. Establishment of a priority schedule for processing warehouse material requisitions	Lack of priority cited as a major limitation to service by customers.	Inability to respond to customer requirements, improved service to customers with need for material within a specified time period.
f. Revise document restriction procedure, inform customer of specific information required for release of line item by document category	Existing distribution restrictions are ambiguous and require clarification. Existing written procedure does not sufficiently explain requirements for issue.	Restrictions on document issue are ambiguous and cause delay in processing customer requisitions. Reduction of processing time and attendant customer inquiries would improve service responsiveness.
g. Establish referral or information service (Customer Service telephone operators)	Provision of information on services will improve NPFC response capability.	Existing procedure for referral inadequate, information on service procedure and requirements not consolidated. Centralization of referral and information function would enhance consistency of customer-NPFC interaction and subsequently improve service provision.

Exhibit 6-1 Summary of Suggested Baseline Modifications (Cont'd)		
Baseline Modification	Justification	Specific Problems and Deficiencies Corrected and Potential Benefits
<p>2. <u>Reporting of Operational Activity</u></p> <p>a. Development of a standardized reporting format; reporting format to provide a summary of organizational unit activity by primary function.</p> <p>b. Revise existing reporting procedure of man-hours allocation to reflect actual hours expended by function/activity</p> <p>c. Reporting of requisitions processed: Development of a reporting format that summarizes processed requisitions by organization unit involved</p>	<p>Existing reporting procedures have not been substantively revised for many years. Current procedures have evolved and have become unnecessarily complex without providing sufficient viable information to justify efforts currently expended on them.</p> <p>Examination of existing procedure indicates present production reporting hours are not representative of actual allocation.</p> <p>Examination of existing reporting system indicates need to clarify accounting for processed requisitions. Revised procedure must account for total, partial and order elements not completed.</p>	<p>Reporting systems are not standardized for intra-department or division use. Activity by units presently documented in formats that restrict comprehensive assessment. Standardized reporting format system would enhance management of unit activity.</p> <p>Reduce error in activity measurement and enhance management of manpower resources.</p> <p>Inability of existing procedures to provide quantitative measure of service effectiveness. Establishment of a comprehensive system would provide a data base sufficient to determine resource allocation by Managers and focus on activity or service deficiencies requiring attention.</p>

Exhibit 6-1 Summary of Suggested Baseline Modifications (Cont'd.)		
Baseline Modification	Justification	Specific Problems and Deficiencies Corrected and Potential Benefits
<p>3. <u>Administration</u></p> <p>a. Requisition Demand Measurement and Reporting.</p> <p>b. Tracking of Demand and Procurement Activity.</p> <p>c. Establishment of Concurrent Procurement Records</p>	<p>Existing reporting system and method of assessing orders for warehouse controlled material does not provide management with data sufficient to assess demand.</p> <p>Identification of line item demand patterns will facilitate identification of material replenishment requirements.</p> <p>Procurement records constitute primary source of line item demand data. Revision of existing file organization to reflect status of line item (active vs. non-active) by document category will facilitate document replenishment activity.</p>	<p>Inability to determine demand for material and, consequently, reduced control over procurement activities. Recording demand characteristics will improve management control of procurement activity and will facilitate determination of requisitioning patterns.</p> <p>Existing procedure determining line item demand assumes a replenishment amount of about 30 percent of the initial stock sent to NPFC. Demand history by document category will provide a quantitative basis for determining replenishment amounts.</p> <p>Existing procurement records encompass a substantial number of records requiring review of replenishment level. Establishment of a file organization that groups line items by document category and demand patterns will facilitate replenishment activity, reduce potential over stocking and disposal volumes.</p>

Exhibit 6-1 Summary of Suggested Baseline Modifications (Cont'd.)		
Baseline Modification	Justification	Specific Problems and Deficiencies Corrected and Potential Benefits
d. Establish a mechanism for periodic count of line items and stock quantity by bin station assignment.	Reconciliation of procurement activity, disposal and DODISS information. Provide management with current inventory status.	Existing records and inventory methods preclude accurate inventory computation. Improved inventory control resulting from periodic count will facilitate replenishment activity, reduce errors in stocking level and consequently reduce disposal volumes.

7.0 STUDY CONCLUSIONS AND RECOMMENDATIONS

Most of the significant recommendations, based on our observations and brief review of NPFC operations, are summarized in Section 6 - Recommendations for Baseline Modifications. This section lists significant conclusions and is intended to supplement the recommendations included in the preceding section.

A few noteworthy conclusions include the following:

1. The potential for improving NPFC operations related to processing of warehouse controlled material seems to be substantial. This could be achieved by streamlining existing operational methods and procedures, and through mechanization of many order processing activities and inventory management/control functions.
2. The potential for application of demand printing technologies on a selective basis is considerable. Some of the document categories (e.g., QPL's and specifications) could lend themselves to digital storage through the use of scanner technology. Once the capabilities of the available technologies are assessed in view of NPFC's requirements, specific cost-benefit analyses may have to be performed to identify particular document categories, and possibly some demand characteristics based subgroups within each category, that will lend themselves to demand printing.
3. The UADPS-SP accounting and reporting system did not always provide the in-depth and detailed data required to achieve the desired results of the study.

Specific areas in which additional management and study efforts are recommended include the following:

1. Current bin assignment criteria and warehouse space utilization needs to be reviewed and analyzed to maximize their inherent economic value and facilitate order processing activities.

2. There is a need to develop time standards for activities and operations currently lacking in that respect. These standards should be periodically reviewed and updated to reflect operational changes. Enforcement of realistic standards can help management in improving productivity.
3. Management and cost-benefit analysis of certain areas need to be performed prior to their mechanization or automation to ensure that all relevant factors are considered, and that implementation decisions are economically and functionally sound.

It should be emphasized that the focus of this study effort was to develop baseline description of operations and characterize NPFC's customer and document bases rather than perform a thorough operations and management audit of NPFC. Therefore, the scope and content of the conclusions and recommendations included in this report should be viewed and judged in that context.

ACRONYM LIST

1. AAA- Authorization Accounting Activity
2. ASO- Aviation Supply Office
3. CODE B- Document Temporarily Out of Stock
4. CODE E- Document Not Stocked at NPFC
5. COG I- Cognizance Symbol for "OI" Publications and "II" Forms
6. DID- Data Item Description
7. DOD- Department of Defense
8. DODISS- Department of Defense Index of Specifications and Standards
9. DPS- Defense Printing Service
10. ICP- Inventory Control Point
11. IDA- Integrated Disbursing and Accounting
12. ILP- International Logistics Program
13. L/I- Line Item
14. NPFC- Naval Publications and Forms Center
15. NPPSO- Navy Publications and Printing Service Office
16. NSA- National Security Agency
17. Q.P.L.- Qualified Product Lists

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